Ag Focus

Managing the 2011 Corn Crop

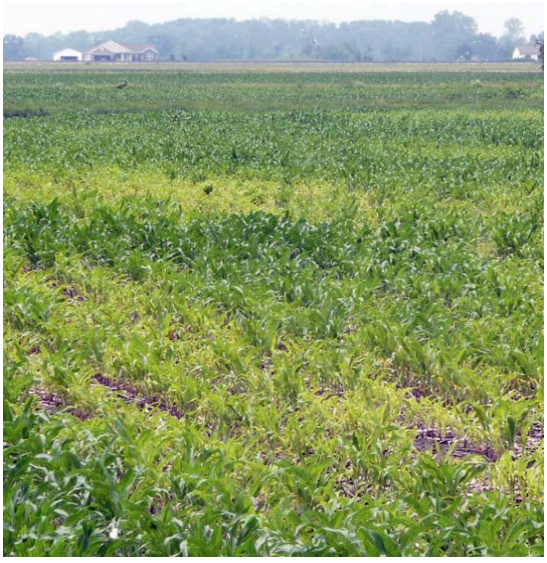
By: Joan Sinclair Petzen & Jerry Bertoldo

This year has certainly brought challenges to Western New York agriculture. Spring left us waiting for soils to dry out and warm up to allow cropping operations to proceed. Many farms had a corn planting season of several weeks instead of several days. The summer solstice came and soils baked in the hot sun with almost no rain for over a month. What result can we expect at the end of the 2011 cropping season? One can only speculate what corn harvest conditions and total yields will be. Growers of corn both for silage and grain are facing a set of complex problems and decisions to make. This month's issue of Ag Focus aims to help growers manage this year's highly variable corn crop.

For corn growers with herds of animals (both dairy and livestock) this will be a year when segregating your corn silage based on quality could play and important role in your herds' performance this coming winter. For growers that intended to harvest for grain but may no longer have that option, this will be a year when considerations should be made for sale of crop as silage.

Be Ready to Make a Deal [1]

The weather conditions this spring may end up causing all kinds of interesting situations at harvest time, especially for corn grain growers. Dairy producers will harvest corn in most any condition even if it ends up being at salvage value (earless). They can get some feed value out of it, even if it's just for heifers. What about the grain grower without



livestock? Corn that does not mature to black layer will generally be unfit to harvest as grain. Corn in this situation (assuming it was dented and with a visible milk line when frost hit) can still produce reasonable quality silage. This will be a bad situation for the grain grower, but could be a win for the dairy producer who needs feed

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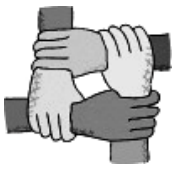

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Wayne•Wyoming•Yates

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Mission Statement

The NWNY Dairy, Livestock & Field Crops team will provide lifelong education to the people of the agricultural community to assist them in achieving their goals. Through education programs & opportunities, the NWNY Team seeks to build producers' capacities to:

- Enhance the profitability of their business
- Practice environmental stewardship
- Enhance employee & family well-being in a safe work environment
- Provide safe, healthful agricultural products
- Provide leadership for enhancing relationships between agricultural sector, neighbors & the general public.

(or at least needs some high quality feed). The grain grower could still salvage a fair amount of value out of the crop if sold for silage. The alternative is a total loss. Be vigilant for these situations and move quickly when they occur.

Silage Corn

Delayed planting followed by hot dry conditions will result in a significant yield reduction on many acres of silage corn in Western New York. For livestock operations that depend on corn silage for much of their forage dry matter (DM), now is the time to determine how much forage you expect to harvest. Managers that estimate forage inventories early allow time to secure additional forage if needed, and to harvest and store at the highest quality possible.

Estimating Yields

Corn silage yields can be estimated based on anticipated grain yield; plant height, if ears are not present or very immature; or by the "bundle and weigh" method. When grain yield potential is limited due to crop stress, corn silage yield is estimated to be one ton of silage for each five bushels of grain. For "normal" corn, yields exceeding 100 bushel per acre, one ton of corn silage at 30% DM, can be expected for each six to seven bushels of anticipated grain yield. For corn that has no or very immature ears, a good rule of thumb is one ton of 30% DM silage per acre for each foot of growth. This estimate will be high for less than three foot tall corn. Although time consuming, weighing a few 1/1000 acre samples from a field, taking the average sample weight and dividing by 20 will result in the most accurate estimate of yield. This method is most accurate when used at or near harvest maturity, 30% moisture. When bundling and weighing is used with less mature or on wet frost damaged corn, the weight must be adjusted to 30% DM before dividing by 20 to give a standardized estimate of feed available. "Estimating Corn Silage and Grain Yields" from the University of Wisconsin details these methods of estimation: http://cdp.wisc.edu/jenny/crop/estimating.pdf.

Row length Equivalent to 1000th/Acre at Various Row Widths	
Row Width	Length (1000th/Acre)
30 in.	17.4 ft.
36 in.	14.5 ft.
38 in.	13.8 ft.
40 in.	13.0 ft.

Harvesting

Silage quality risks must also be considered whenever a crop is harvested at less than ideal maturity. To minimize this risk every effort must be made to harvest silage at the right DM. The target for proper fermentation is 32--38% DM. A microwave or Koster tester can be used to accurately determine whole plant DM for the best results. Koster testers will overestimate DM by 2%. Dry down rates are affected by a number of factors including hybrid, frost damage, brown midrib verse conventional type of corn, and weather conditions including humidity and temperature. Whole plant dry down rates are about 0.5% per day in September as thumb rule. Forage ensiled outside the target DM range is at a greater risk for improper fermentation that can impact both palatability and nutritional value of the feed. Forage harvester settings, if using a processor, should be at ¾ inch theoretical length of cut (TLC) and the processor rolls should be at an opening of 1-3mm. If not using a processor, the TLC should be at ¼ - ½ inch. Due to variability in hybrid, stand density, DM, field speed, what comes out of the harvester should be monitored for particle size and kernel breakage (>90%).

A wide range in maturity of the corn crop is also going to impact forage fermentation losses and total corn silage DM available to feed. Producers have become very skilled at handling large acreages and harvesting their whole corn crop in a short time. Fermentation losses have been minimized by getting bunks packed and covered quickly. With planting stretched out over several weeks and anticipated yields down it will be important to monitor maturity of corn in the field closely. Early maturing corn will need to be segregated from later maturing corn for two reasons. First, to preserve total tons of feed, the early crop will need to be harvested packed and covered quickly. Second, this corn will likely differ in nutrient value from later maturing corn that might have to be harvested before it reaches physiological maturity. Segregating these feeds will give managers greater control and allow allocating feeds of differing nutrient content to different groups of livestock

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according to nutritional need. For example, the higher energy, early maturing corn can be reserved for the high milking group and lower energy, immature corn can more easily worked into the diets of either bred heifers or dry cows and still meet the nutritional needs of both groups.

There are environmental and economic considerations to be made when ensiling immature silage. The effluent produced as wet silage is packed is a concentrated pollutant and must be contained. The nutrients that are lost in silage leachate are high in sugars, which results in poorer fermentation and reduced nutrient value of the silage. These nutrients are costly to replace in the form of purchased feed.

Recommendations for Storage [2]

- Store any BMR corn silage in a separate silo.
- Make sure that you have enough packing tractor weight. The thumb rule is 800 lbs. of packing tractor weight for each ton of silage put in the bunk per hour. If you have a fill rate of 100 tons/hr., you would need 80,000 lbs. of tractor weight.
- Pack in thin layers (6-8 inches) if possible.
- Cover the bunk walls with plastic on the inside to minimize air infiltration through cracks and joints.
- Seal the silo with plastic, sand, bags, tires or the new lower oxygen permeability covering material.
- Consider the use of a research proven bacterial silage inoculant or acid preservative to assist in improving fermentation efficiency and DM recovery. Ask for data supporting product claims.
- Handle and use the product according to directions from the supplier. Improper application rates, water used for mixing, water temperature in the tanks, and how long the product has been mixed change the product's effectiveness.

Recommendations for Frosted Corn Silage [2]

This year, we may get a killing frost before much of the corn has reached maturity for harvest. The following factors should be considered when managing frosted corn silage:

- The leaves will quickly turn brown and the plant will appear "dry". This gives a false reading on whole plant DM since leaves are only 10-15% of the total plant weight on a DM basis. Most of the plant moisture is in the stalk and ear.
- Whole plant DM needs to be determined to assess when to harvest. Corn for silage should be at 32% DM before you start chopping. The target range for harvest is still 32 – 38% DM.
- The frost may kill some of the normal bacteria found on the plant. A research proven bacterial silage inoculant should be used to assist in getting a good fermentation started when ensiling this crop.
- Once you start harvesting, harvest as quickly as possible. This will lower the risk of the plant getting too dry and any molds that could grow on the ear while it is still in the field.
- Follow normal guidelines for packing and sealing the silo.

Grain Corn

First, for corn acres planted for grain, the big question is whether corn will mature enough to make grain before the frost. A recent article published on University of Illinois's farmdocdaily web site examined the years between 1975 and 2010 when the temperature for the month of July exceeded the average of 75.2 degrees by 2 degrees. According to the article, the average corn yield for those ten years was 11 bushel below the average of all 35 years. The average technology corrected yield for the 35 year period was 168.7 bushels and the average for the ten warm years was 157.7. Illinois average rainfall for the month of July is 4.0 inches. The average yield in the six warm years when the rainfall was below average was 147.6. One could infer from that data that here in Western New York we can expect yields to be down 6 to 12 percent because of hot dry conditions. See the insert for a guide on estimating corn grain yield prior to harvest.

Considerations for Quality

Next, what quality will the grain be? At this writing in mid-August much of our corn has tasseled and silked and pollination is complete. But a few fields of later planted corn are at risk for poor quality because it will not reach physiological maturity (black layer) before a frost. The risks for these fields are threefold. First, harvesting efficiency is compromised when kernel moisture is higher than 30%. With increased cylinder speeds and closer concave settings one can expect greater kernel and cob breakage. It is

Recommended to make adjustments to the concave setting first and try to keep cylinder rpms as low as possible to reduce breakage according to the Grain Quality Task Force at Purdue University. Consider as well that corn harvested before it is well dented will have a lower test weight than more mature corn. Lastly, risks of mold and yeast development increases when corn is standing in the field after a killing frost. This risk is greater when warmer temperatures follow the killing frost and ear moisture levels are still high. These risks can be mitigated by salvaging the crop for silage.

Estimating Corn Grain Yields [3]

To make an approximate pre-harvest estimate of corn yields, count the number of kernel rows on a representative ear. Also count the number of kernels/row. Next determine the number of ears/acre.

Now, multiply the kernel rows by the kernels/row and then by the ears per acre. Divide this number by 90,000 to get bushels/acre.

Repeat this process at several areas in the field to get a representative sample of the crop. The final yield will depend on conditions during grain fill- this estimate is for average sized kernels. Under continued drought stress through grain fill this may overestimate yields.

Example:

16 rows x 25 kernels/row x 25000 ears/A= 10,000,000 kernels/A

10,000,000/90,000 kernels/bu=**111 bu/A**

Buying and Selling Forage in the Field

2011 brings a need for a number of producers to consider buying or selling standing corn or hay in the field. The question frequently comes up as to what is a fair price to pay or charge for a standing crop. A number of factors come into play. The quantity and quality of the crop are critical factors to consider. For standing corn to be chopped for silage, a key factor is whether or not the crop will reach maturity. Corn that is in the milk or soft dough stage must be discounted because it will be considerably lower in nutrients than corn that has reached maturity. Supply and demand are additional factors that will influence price in any given locale. Here in Western New York with many acres of late planted corn there is a pretty good chance some standing corn for silage will be available. On the other hand if dairies are short on forage they are going to be in the market for some.

There are a number of resources on pricing corn silage available that factor in the prices of corn grain, soybean meal, hay, etc. Here are links to access spreadsheets developed by the University of Wisconsin: http://corn.agronomy.wisc.edu/Season/DSS.aspx and Penn State Cooperative Extension: www.das.psu.edu/dairy-alliance/resources/drought-survival-guide. Each of these looks at the value from both the buyer's and the seller's perspective and considers slightly different factors to estimate prices. These tools are a good place to start, but in the end it is negotiation between a buyer and a seller that is needed to arrive at a price.

Purchasing some standing hay may be an option for some. A University of Wisconsin's Focus on Forage fact sheet: www.uwex.edu/ces/crops/uwforage/Pricingstandhay-FOF.pdf outlines a process for valuing standing hay based on dry hay prices including considerations for yield, harvest cost and quality.

Summary

2011 has challenged us once again with unique conditions. Take a look at the resources offered to inform your decision making with respect to your corn and hay crops. As we look forward to the fall harvest season, managers can minimize their stress and make the most informed decisions by considering potential challenges now and strategizing for how to best address them as harvest moves forward. Take time today to take stock of the crops you have in storage already and what you can reasonably expect from standing crops. Let's hope that Mother Nature provides a later than usual killing frost and workable field conditions for fall harvest, but managers should develop a plan for working through less then optimal conditions. Your investment in a plan will help guide your decisions in the coming weeks.

[1] Balbian, D. (2011) The Best Laid Plans… *Central New York Dairy News* (4.2)

[2] Chase, L. & Overton, T. (2009) Management Considerations for Immature and Frosted Corn Silage. *Cornell University Dept. of Animal Science*

[3] Roth, G.W. (2011) Managing Drought Stressed Corn Penn State Dairy and Animal Science Drought Survival Guide: *http://www.das.psu.edu/dairy-alliance/resources/drought-survival-guide*

On a Farm Near You...

High Point Farms LLC, Trumansburg

By: Nancy Glazier

When I paid a visit (August 8) to Tina and Bob MacCheyne recently, the grass was just beginning to grow again from summer dormancy due to dry conditions. That makes it tough for a grass-fed operation. The chickens – both broilers and layers – handled it fairly well since their diets are primarily from feed. The mixed breed beef herd was moved to a sacrifice area and fed hay. Meat harvest has to continue no matter what the weather to keep up with demand.

Tina MacCheyne with one of her guard animals, the goose.

The breed of choice for broilers is the Freedom Ranger. The genetic stock is derived from the American and European old heritage breed of chicken and was developed in the early 1960's to meet the highest standards of the French Label Rouge Free Range program. It is the preferred breed for pastured poultry since it tends to handle outdoor conditions better. One downside is it is a slower growing meatbird. The target number for broilers this summer was 1,700 birds. A friend processes them. Since the egg layers and broilers are out on pasture, predation has been an issue in the past. This year, Tina has some geese in with the 2 groups of chickens. The goal is to have them be guard animals. Right now, they are young but vocal. The beef herd is an assortment of Hereford, Angus, Galloway and Highland cows crossbred with a shorthorn bull. Turkeys are also raised; out of the 50 chicks they started, only 30 or so remain due to predation. They are in the yard closer to the house to try to reduce that problem.

Having multiple sales points helps with their marketing strategy. High Point Farms is featured in the meat case at the Trumansburg Shursave and the Good to Go Market. The idea was to highlight a local meat producer without having them compete with commodity meat. A poster highlights their operation. They also have an on-farm meat store open Friday and Saturday. Check their website at http://www.highpointfarms.net for hours.

Tina has spent some time setting up meat CSAs (community supported agriculture) in New York City after their accountant told them to improve their marketing or get out of farming. Currently, 70% of their sales come from the CSAs. Prepaid shipments go every 2 weeks to drop points in Manhattan and Brooklyn/Williamsburg, transported by Regional Access of Ithaca. RA has 20 delivery routes across the state to support local farms in getting products to larger market centers. Tina explained that to have enough meat (which ships frozen), she must have quantity ahead for 2 months' worth of shipments. She purchases pork from another farm, but beef, chicken and eggs are from their farm.

At the Manhattan restaurant drop site, Jimmy's No. 43 owner Jimmy Carbone uses MacCheynes' beef in his establishment. He entered High Point burgers in Cookout NYC where they won the "People's Choice" award and the judged competition.

The farm will have the another spotlight on them, albeit a smaller one, on Tuesday, September 13. Tina and Bob are hosting a pasture walk to focus on pasture, fence and waterline improvements recently made to the farm. Start time is 6:00 pm at their farm at 9448 State Rte. 96, just north of the village of Trumansburg. We will conclude with some refreshments, so plan on attending! The event is sponsored by Graze NY through Seneca County Soil & Water Conservation District. For more information, give Nancy a call.

Strategic Marketing Workshops for Livestock Producers

6:30 - 8:30 p.m.

Thursdays, September 15, 22 & 29

Session 1, September 15: Introduction to Strategic Marketing: Identifying a Target Market

Session 2, September 22: Communicating with Customers

Session 3, September 29: A Guide to Marketing Channel Selection

Topics covered include: usage of claims, creating content for marketing materials, positioning, branding, differentiation, processing and marketing legalities, and more.

CCE-Wyoming County - Joan Petzen

401 North Main Street, Warsaw

To register contact: Jenn Carges, 585.786.2251 x124 or jar97@cornell.edu

CCE-Wayne County - Nancy Glazier

1581 Route 88 North, Newark

To register contact: Judy Glann, 315.331.8415 x117 or jmg358@cornell.edu

Cost: $10.00 per person/farm (limit 2) or $30.oo for the series. A wrap-up session for participants will be held at a later date. For more information, contact Nancy Glazier at 585.315.7746

Ask Extension...

Winter Wheat Reminders

By: Mike Stanyard

It was a tough start for much of our wheat acres this spring. Extremely wet fields led to poor populations and reduced yields in many locations. Nitrogen and herbicide applications were difficult to get applied in a timely manner and in some cases did not get applied at all! Don't get me wrong, we still had some great wheat and had fields over 100 bushels. Overall, the highs and lows evened out to be just an average year. The extremely warm and dry June and July led to an early and fast paced wheat harvest. Two big pluses were the low incidence of vomitoxin and good market prices.

August 1st survey data from the National Agricultural Statistics Service, New York Field Office estimates winter wheat production for the Empire State at 6.27 million bushels, down 6 percent from the 6.70 million bushels produced in 2010. Yields are forecast at 55 bushels per acre, 12 bushels less than last year. Harvested acreage is projected at 114,000 acres, up 14 percent from 2010.

When should we start planting winter wheat?

Historically, planting time has been determined by the Hessian fly. However, this fragile fly is all but eliminated by the first frost. Fly-free dates have been established based of feet above sea level and distance south of Lake Ontario. Starting dates can range as early as September 6th at 1500 ft. in Seneca County to September 17th at 400 ft. in Niagara County. September 15 is a good starting date for everyone in our region.

Variety selection

Here in NWNY we have switched from growing predominately white wheat varieties to red wheat. A major reason has been that red varieties will not sprout as quickly in the field. Cornell has released the yield results of the 2011 red and white winter wheat trials from across the region. These results can be viewed at our team web site, (www.nwnyteam.org.) or send me an email and I'll get a copy to you.

Planting Date	Seed Per Acre
September 15	1.20 million
October 1	1.35 million
October 15	1.45 million
October 30	1.65 million

Planting reminders

It is important that soil tests be done now since 10-20 lbs. of N and all of the P and K should be banded or broadcast at planting. The majority of the N will be applied in the spring. Winter wheat also performs best at a higher pH of around 6.3. Seeding rates should increase as the season gets later (See chart 1). Seeds should be drilled 1-1.5 inches deep for good emergence.

Weed Control

Winter annual weeds are the most prevalent weed competitor for our winter wheat. Chickweed, purple dead nettle, shepherds purse, corn chamomile and others in the mustard family emerge right along with the wheat crop in the fall and can really pull down yields. Many producers are spraying with Buctril or Harmony Extra in the fall so they are starting clean in the spring. This is also the best option if you plan to underseed your wheat with clover in the spring. I hope this past water logged spring changes some minds about fall weed control.

Seeding Rate:
Recommended rate / Percentage of live seed = Rate/acre

Example:
1,350,000 seeds / .90 live seeds = 1.48 million seeds/acre
For pounds per acre, use the following formula:
Seeds per acre / # seeds/lb. = lb./acre

Example:
1,450,000 / 13,000 = 111.5 lb./acre

Why Maintaining SCC Below 400,000 Cell/ml Makes Cents

By: Jackson Wright

Mastitis is one of the most costly diseases to dairy producers. The economic losses associated with are decreased production, increased labor, discarded milk, treatment costs, and premature culling. Mastitis also inhibits future milk production potential and decreases milk quality, hence the lost milk quality premiums. To assess milk quality, raw milk is consistently tested for somatic cell count (**SCC**), bacterial count, and antibiotic residues. Currently the U.S. regulations require milk SCC to be below 750,000 cells/ml, yet pressure from global markets has sparked debate over reducing this threshold to 400,000 cells/ml.

Internationally, bulk tank SCC of Australia, the European Union, New Zealand, Norway, and Switzerland are all limited to 400,000 cells/ml. In Canada bulk tank SCC is limited to 500,000 cells/ml. Despite differences in quality standards, the U.S. dairy industry has shifted from mostly domestic to exporting a large amount of dairy bi-products; such as lactose, whey, and dried milk. Since 2002 the total value of U.S. dairy exports has tripled from $1.0 billion to $3.4 billion. However, in 2009 the USDA was notified that exporters would have to meet milk quality standards set by the European Union to gain access to these markets. Currently, the implementation date of these milk quality standards has been postponed multiple times and an active date is not currently defined. Recently, the proposal to lower SCC to 400,000 cells/ml was defeated, however it is likely that the European Union will restrict importation of dairy products with SCC greater than 400,000 cells/ml in the near future. Upon enforcement, U.S. dairy exports will have limited access to these global markets, greatly decreasing demand and subsequent milk price.

To maintain SCC below 400,000 cells it is important to recognize the best management practices that minimize exposure to pathogens. Pathogens are often categorized as contagious or environmental. *Staphylococcus*, *Streptococcus*, and *Mycoplasma Bovis* are common contagious pathogens, and use the udder as their primary reservoir. Consequently, transmission of contagious mastitis usually occurs from exposure to contaminated milk left on the liner between cows during milking or leaked onto mattresses. To minimize exposure during milking, milk should be forestripped and checked for infection. Cows with irregular milk should be segregated and milked last, and may require further treatment. Environmental pathogens are generally coliform bacteria such as *E. Coli*, *Klebsiella*, and *Enterobacter*; and rely on moisture in the environment. Often environmental exposure cannot be completely avoided, however when cleaning lactating or dry cow pens emphasis should be placed on removing moisture, mud, and manure. Milking procedures should also include using an effective teat dip and covering the entire teat, dry cow therapy on every quarter of every cow, performing routine maintenance of the milking equipment, and culturing cows with clinical mastitis. In addition, automatic takeoffs, maintaining udder hygiene, performing a complete milking routine (i.e. strip, pre-dip, dry, apply the milking machine, and post-dip), CMTing suspect cows, and recording clinical mastitis and treatments appear to be effective in reducing mastitis.

It is also important to recognize that many cows maintain a SCC less than 100,000 cells/ml, and cows with SCC greater than 200,000 cells/ml likely have an infection in one or more quarters. Many dairy software packages will offer a chronic cow list, showing every cow with the last two test days greater than 200,000 cells/ml. Other important things to consider are what portion of the total bulk tank SCC is each cow contributing and recognizing the options are limited to treating the animal with antibiotics, drying off the cow or individual quarter, segregating the animal, quartermilking, or culling the animal. Ultimately, adopting best management practices that reduce SCC and improve milk quality provides economic incentives in terms of milk quality premiums and increased future milk production potential, and may be necessary to gain access to global markets in the future.

A Report on Farm Machinery Costs

By: John Hanchar

Summary

Farm business owners use machinery cost information to answer a variety of questions -- What are the costs of production for an enterprise? Should I hire a custom operator to perform a task, such as harvesting corn silage? What should I charge for custom work that I do? Should I adopt a zone tillage cropping system to replace a current conventional tillage cropping system? Should I purchase a standing crop, for example, corn silage, and at what price? What should I charge, if I am thinking about selling a standing crop?

Sources of ready to use data include: information from farm records; machinery cost estimates from universities and other sources; and custom rate data, since they reflect costs incurred by the custom operator in providing a service to the buyer.

Electronic spreadsheets allow the farm business owner to develop estimates specific to their farm operations using producer supplied information.

Cost Concepts[1]

A farm machinery cost is the value, generally in monetary terms, given up by a farm business owner or custom operator to use farm machinery in the production of goods and services. Both fixed and variable costs are important in machinery management. Machinery fixed costs are often called ownership or overhead costs, and variable costs may be referred to as operating costs.

Fixed costs

Fixed or ownership costs do not vary with changes in the annual use of the machine. Fixed costs include: depreciation; interest; repair and maintenance costs that do not vary with annual use; taxes or fees levied on farm machinery; insurance; and housing.

Depreciation is a noncash cost to reflect the loss in value from age, wear, tear, and obsolescence. A charge for **interest** reflects that capital has an opportunity cost based upon the expected return in capital's next best alternative use, for example, the interest rate on savings accounts, or the current interest rate on borrowed capital. Some **repair costs** are fixed, since a certain level is necessary to maintain and get used machinery back into operating condition. However, due to the difficulty in dividing repairs into fixed and variable components, most machinery cost work includes repairs as a variable cost. Some states levy a property **tax** on farm machinery. Other fees such as license fees that do not vary with changes in annual use are included, since they are costs of ownership. The cost for **insurance** reflects the annual amount paid to cover the loss of the machine due to damage, and any liability coverage. **Housing** costs can be included to reflect the portion of fixed and variable building costs incurred to keep a farm machinery item protected.

Variable costs

Variable costs are directly related to use. If the machine is not used, then variable costs are zero. Variable costs tend to increase directly with the amount of annual use. Variable farm machinery costs include: repairs; fuel and lubrication; and labor.

Farm records or mathematical expressions can be used to measure repair and maintenance costs. Gasoline, diesel fuel, oil, filters, and other fuels and lubricants are included in the fuel and lubrication category. Again, farm records or other estimates can be used to measure these costs for a machine. The total labor charge should reflect the time operating the machine in the field, plus the time spent fueling, lubricating, adjusting, and travelling between fields.

Sources of Cost Information

Farm business owners should strive to measure farm machinery costs using their businesses' farm records. Age, usage, maintenance practices, expected length of ownership and other factors specific to a farm business cause costs to vary across businesses.

A variety of sources use economic engineering approaches to estimate fixed and variable farm machinery costs. Historically, one of the most consistent and comprehensive efforts has been conducted by William Lazarus, University of Minnesota Extension. However, the last set of estimates from this source apparently is from June 2009. Use the following web address to access the estimates http://4h.umn.edu/distribution/businessmanagement/DF6696.pdf Links to this source, and the other sources described in this article can also be found on the team's website.

Electronic spreadsheets can also be used to estimate machinery costs. Many analysts working in the farm business management area have developed tools for this purpose. Iowa State University is one of many sources for these calculator tools -- www.extension.iastate.edu/agdm/crops/xls/a3-29machcostcalc.xls

Custom work expenses reflect to varying degrees farm machinery costs. Sources reporting custom rates can be a source of farm machinery cost information. USDA and its National Agricultural Statistics Service (NASS) cooperate with the Pennsylvania Dept. of Agriculture to collect data annually. Visit www.nass.usda.gov and type "machinery custom rates" in the "Search NASS" window to access information. A source for NY information is from Franklin Co. in Northern NY for the year 2010 -- www.smallfarms.cornell.edu/pdfs/2010-Custom-Rates-Fees[1].pdf

A comparison of these sources using a relatively large self propelled forage harvester equipped with a corn head as an example appears in table 1.

If you would like to discuss the farm machinery cost topic further, including the possibility of collecting information, for example custom rates regionally, or if you are interested in developing estimates for your business using an electronic spreadsheet or your farm records, then please contact me.

[1]Kay, R.D. (1986) Farm Management: Planning, Control and Implementation. *McGraw-Hill*

Table 1. Machinery Cost Information for a Relatively Large Self-propelled Forage Harvester with Corn Head by Source.

Source	Year	Dollars Per Hour	
		Range	Reported
USDA/NASS with Pennsylvania State Dept. of Ag	2011	200 - 350	281
USDA/NASS with Pennsylvania State Dept. of Ag	2010		260
Franklin County, NY	2010		225
Univ. of Minnesota Extension	2009		292
Estimate using Iowa State's Cost Calculator	2011		266

Note: Estimates from the last two sources are for the total cost, fixed plus variable, including operator labor.

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1998 Autocar ACL64, Det. 12.7L 470 h.p., 8LL trans., eng. brake, Volvo T-Ride susp., 4.87 ratio, 336" w.b., tri axle, 20,000# F/A, 46,000# R/A, 189,043 miles, boom truck w/25' deck, D.F., **no rust truck, very clean, stk# 3619, $36,900.**

(2) **2001 Peterbilt 357,** Cums ISM 335 h.p., 8LL trans., Chalmers susp., 205" w.b., 22.5 tires, T/A, 20,000# F/A, 44,000# R/A, 145,062 miles, low mile trucks, mixers to be removed, 21' of frame behind cab, stk# 3583/3584/3585, $28,900.

1999 Peterbilt 357, CAT C12 425 h.p., 8LL trans., eng. brake, air ride susp., 178" w.b., 22.5 on alum., T/A, 18,000# F/A, 44,000# R/A, 520,601 miles, nice, clean heavy spec day cab, new recap tires, stk# 3628, $27,900.

(3) **2000 Western Star Plow/Sander Trucks,** CAT C12, 410 h.p., eng brake, 8LL, air lift 3rd axle, dbl frame, 20,000# F/A, 44,000# R/A, 211" w.b., 16/ steel bed, 12 ft plow, Monroe 11 cy spreader, pre wet sys, elec spreader control, hyd tailgate spreader

1998 Kenworth T800; N14 Cummins 435 HP; 403,292 Miles; Dsl.; Eng. Brake; A/R Susp.; 4.11 Ratio; 22.5 Tires; Alum. Whls.; T/A; 12K FA; 46K RA; Good Running, Looking Low Mile Heavy Spec Day Cab w/Wetline; Stk. 32641; **$28,500**

2007 Mack Vision CXN613, Mack 460 h.p., 18 spd., eng. brake, air ride susp., 191" w.b., 22.5 on alum., T/A, 14,000# F/A, 46,000# R/A, 416,692 miles, very clean day cab, ready to go, stk# 3667, $47,900.

(2) 2006 Mack Vision CX613, Mack E7 427 h.p., 10 spd., eng. brake, air ride susp., 177" w.b., 22.5 on alum., T/A, 12,000# F/A, 44,000# R/A, 530,688 miles, heavy spec day cabs w/wetlines, stk# 3617/3618, $37,000.

2002 Peterbilt 385, CAT C12 425 HP, 544,771 Miles, Diesel, 10-Spd., Eng. Brake, Air Ride Susp., 22.5 Tires, Alum. Whls., 185" W.B., T/A, 12K FA, 40K RA, Good Running Day Cab, Just Off The Road, Wetline, Ready For Work, Stk. #3687, **$23,900**

2003 Kenworth T800, CAT C12 445 HP; 689,124 Miles; Diesel; Eng. Brake; Chalmers Susp.; 21' Length; 24.5 Tires; Alum. Whls.; 324" W.B.; Five Axle; 20K FA; 46K RA; Alum. Composition; Good Looking, Good Running HD Dump Truck w/Alum. Body & Electric Tarp; Stk. #3686; **$44,500**

2005 Western Star 4900, CAT C15 475 h.p., 18 spd., eng. brake, Haulmaax susp., 244" w.b., 36" flat top slpr., 22.5 on alum., T/A, 14,600# F/A, 46,000# R/A, 545,068 miles, stk# 3636, **$52,500.**

1999 Western Star 4964FX, CAT 3406E 475 h.p., 18 spd., eng. brake, Hend. susp., 258" w.b., 24.5 on alum./steel, T/A, 12,000# F/A, 45,000# R/A, 443,813 miles, southern truck, stk# 3626, **$52,500. Also: 1999 Peterbilt & 1994 Western Star Oil Field Winch Trucks!**

1979 Kenworth C500, Cums. 855 Big Cam 400 h.p., 5&4 spd., eng. brake, rubber block susp., 269" w.b., T/A, 20,000# F/A, 46,000# R/A, HD flatbed w/Tulsa 35 ton winch & 18 ½' deck, 5th whl. folds down & hides in deck, stk# 3632.

1999 Peterbilt 357, CAT C12 420 HP; 401,926 Miles; Diesel; Eng. Brake; Chalmers Susp.; 24' Length; 22.5 Tires; Alum. Whls.; Six Axle; 20K FA; 46K RA; Alum. Composition; Super Clean; Dbl. Frame; Rubber 80%; Electric Tarp & Bed Liner; Auto Lube System **$59,900**

2004 Freightliner FL80 Std. Cab, CAT 3126 246 h.p., 9 spd., 30"x96" body, spring susp., all steel whls., T/A, 12,000# F/A, 40,000# R/A, swing door, 348,530 miles, good runner, stk# 3554, **$22,500.**

2005 Peterbilt 335, CAT C7 330 HP; 156,256 Miles; Diesel; Eng. Brake; A/R Susp.; 14' L; 22.5 Tires; Alum. Wheels; 180" WB;T/A; 13,400# FA; 40K RA; Steel Comp.; D/F; Very Clean, Ready For Work; Low Miles; Heated Box; Elec. Tarp; Full Locking Rears; Stk. #3512; **$55,900**

2006 Peterbilt 357, Cums. 330 h.p., Allison auto., 20,000# F/A, 46,000# R/A, 250" w.b., alum. wheels, 10'6" cu. yd. mixer, steerable booster axle, remote controls. **Also: 2005 Peterbilt coming soon! In Stock: Int'l, Kenworth, Volvo & Peterbilt Mixers or C&C.**

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2004 Freightliner FL70, C7 CAT 190 h.p., 6 spd., 10', spring susp., steel comp., 22.5 tires on all steel, S/A, 12,000# F/A, 21,000# R/A, 60,358 miles, good runner, low miles, **$28,500.**

1998 Mack CL713, Mack E7 400 h.p., Fuller 8LL trans., air lift 3rd, 4th & 5th axles, dbl. frame, 20,000# F/A, 44,000# R/A, Camelback susp., 21' alum. box.

2003 **Western Star Concrete Mixer,** CAT C12, 410 h.p., Eaton Fuller 8LL, 20,000 F/A, 46,000# R/A, 249" w.b., Kimble 11 cu. yd. mixer, booster axle, in-cab controls, 143,000 miles, Pete, International, Kenworth, Volvo, etc.

2003 International 7600, 300 h.p., eng. brake, Allison A/T, Rubber block over beam, 20,000# F/A, 46,000# R/A, 272" w.b.,

1999 Int'l 5000 PayStar, Cums., Jake Brake, 8LL trans., air lift, 18,000# F/A, 46,000# R/A, vac. pump, rear discharge. Many Other Freightliner/Volvo/Int'l Alum. & Steel Tank Vac. Trucks In Stock & More Coming!

1994 **Mack RB688S,** E7 Mack 400 h.p., 13-Spd., 20' Steel Box, 261" w.b., 22.5 Tires, Tandem Axle, 20,000# F/A, 46,000# R/A, 492,320 Miles, Clean, Double Frame, $21,500

2006 Hyundai ROBEX 450LC-7, bucket, 11' stick, 4641 Hrs.

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To Bonus or Not to Bonus

By: Greg Coffta

When it comes to managing milk quality and the team of employees that harvest milk, there is an ongoing debate over whether or not to give milk quality bonuses to milkers. On one side of the debate, there is the notion that the employee is motivated first and foremost by money; therefore supplying a quality bonus for high quality milk is the best way to motivate a team of milkers to be clean, efficient and attentive to milk quality. Many employees on our dairy farms are immigrants that plan to stay here for 5-6 years maximum- just enough to build up a life in their home country- and then return. Money *is* the reason they have made the long journey north to milk cows, so why shouldn't milk quality bonuses motivate them?

On the other side of the debate, the view is that an employee gets an hourly rate, and they are already paid to do their job well- why pay a milk quality bonus? Some of the aforementioned employees would agree with that sentiment, saying something like, "I do the best job because that is what is ethically necessary to truly earn a paycheck." Another argument on this side of the debate is that when a bonus is given, the employee begins to expect it and eventually just counts it as part of the regular paycheck and thus stifling motivation.

So what is the dairy manager to do? Some have tried the bonus system and then left it because of the frustration of not getting results. Some dairy managers have paid out the same monthly bonus for a long period of time. If the farm gets a premium, the milking/pushing crew shares half of it, regardless their performance or incremental improvement. Other managers seem to motivate their employees well without the use of a bonus system. Ultimately, the bonus system is one of many tools that can be used by the dairy manager to manage, teach and improve the milking/pushing crew.

A few things can and should be said about the bonus system is that purpose, communication and clarity are crucial to its success, especially when managing across differences in language. A bonus system should be drawn up and explained clearly to employees so that they truly understand its purpose. A bonus system should use somatic cell counts and bacteria counts only as a part of the bonus equation- individual employee actions should count as well. Periodic progress updates must be communicated to employees so that they know when their work is worthy of a bonus, and when it isn't. Set a standard to be met in order to achieve a bonus, once the employees achieve the bonus let them receive it for 3-4 months, and then reset the standard. The bonus should be about continual improvement, and it works best when the bonus is not always given.

Greg Coffta is the Bilingual Dairy Support Specialist with the North West New York Dairy, Livestock & Field Crops Team. He can be reached at 585.208.8546 or gjc53@cornell.edu

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21	NYS Dry Bean Field Mtg., 4:45 - 8:30 p.m., Rod Stettner's Farm, E. of Bergen & Rob & Dan Duyssen Farm, Stafford, To pre-register for supper or to sponsor - call: Carol MacNeil: 585.313.8796 or crm6@cornell.edu
22	Strategic Marketing Workshops for Livestock Producers, Session 2, 6:30 - 8:30 p.m., CCE-Wayne Co. or CCE-Wyoming Co.
24	Fun-on-the-Farm, 11:00-4:00 p.m., DeBoovers Farm, 1382 County Rd. 23, Phelps
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