

AgFocus

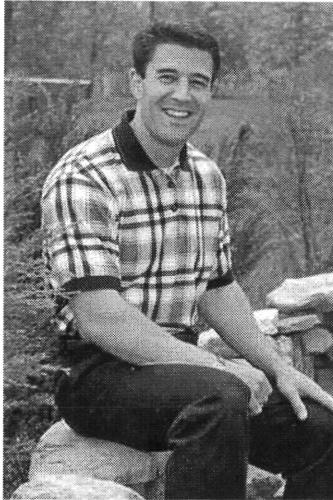
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MONTHLY NEWSLETTER OF THE NWNY DAIRY, LIVESTOCK AND FIELD CROPS TEAM



Estimating Corn Grain Yields Prior to Harvest

By Mike Stanyard, Area Extension Educator

As I look at the corn crop throughout the Finger Lakes area, extreme variability sums it up in two words. I've seen fields at both ends of the spectrum and everything in between. Much of this variability will be worse in areas that received limited rainfall and thus droughty

conditions. Unfortunately, this comprises a major portion of NWNY.

Drought stress during pollination and grain fill was the major reason for poorly filled small ears. However, there were other stress factors that amplified the drought stress and contributed to the reduced corn growth and grain yield.

Pest Problems

Poor weed control and corn rootworm damage have been evident in the worst fields I have been asked to investigate. Weeds that were not controlled grew up with the corn and competed for the limited water available in the soil profile. Additionally, corn rootworm hurt corn production in two ways. First, the rootworm larvae clipped the root system of the plants therefore limiting the amount of root surface area that could be utilized to absorb both water and nutrients. Second, the adult rootworm beetles emerged and clipped the ear silks just as pollination was occurring. Put all these stress

factors together in one package and you have a severe crop disaster!

Estimating Yields

Many growers have been asking about estimating corn grain yields prior to harvest to see how much the drought and additional stresses have affected their crop. Two methods commonly used for yield estimates are the Yield Component Method and the Ear Weight Method.

The Yield Component Method (YCM) can be utilized as early as the milk stage of kernel development and therefore, can be utilized to determine if a crop should be allowed to be harvested for grain, or cut for silage. The YCM uses a predetermined average kernel weight that is utilized in an equation to calculate grain yield. Therefore, since 2001 was a drought stressed year with below normal rainfall, kernel size should be smaller and YCM will overestimate grain yields.

Calculate the estimated corn grain yield as follows:

Count the number of harvestable ears in a length of row equal to 1/1000th of an acre. For 30-inch rows, this would be 17 ft. 5 in.

Then, on every 5th ear, count the number of kernel rows and number of kernels per row and determine the average. Do not include kernels that are less than half the normal size.

$$\text{Yield (bu/ac)} = (\# \text{ of ears}) \\ \times (\text{avg. # rows}) \times (\text{avg. # kernels}) \\ \text{divided by } 90$$

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Preliminary Corn Silage Results

These are some preliminary corn silage results throughout the region. Some samples are still at the lab and some farmers have just started to chop (Sept. 13). If you have sample results from your corn and are willing to share them, the NWNY Dairy Team, PRO-DAIRY, and Cornell Dairy Management can use them to formulate and discuss recommendations for this feeding season. Please contact Nate, Mike, or Roberta if you have questions on testing or results.

Con't from page 1.

Repeat this procedure in a couple of areas within the same field for better accuracy.

The Ear Weight Method (EWM) can only be used when the grain is physiologically mature (black layer obvious). This method is based on actual ear weight and it should be more accurate than the YCM.

Again, count the number of harvestable ears in 1/1000th acre (17'5" on 30" rows). Weigh every 5th ear and calculate the average ear weight (pounds). Hand shell these same ears and determine the average percent moisture with a portable moisture tester.

Calculate estimated grain yield as follows:

Step A. Multiply ear number by average ear weight.

Step B. Multiply average grain moisture by 1.411.

Step C. Add 46.2 to the result from Step B.

Step D. Divide result from Step A by the result from Step C.

Step E. Multiply the result from Step D by 1000.

Example: A field was sampled with 24 ears per 17' 5", an average ear weight of 0.5 lb., and average grain moisture of 32%.

Estimated yield is $[(24 \times 0.5) / (1.411 \times 32) + 46.2] \times 1000 = 131 \text{ bu/ac}$.

If you need tables that list the row length for 1/1000th acre, or other factors, give a call.

Remember, these are **only estimated yields**, but they should give you a better idea of where your corn yields are going to end up this year.

We can't control the stress that occurs from lack of rain (unless we irrigate), but if you would like more information about weed and corn rootworm management give me a call!

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Fall Crop Topics

By Nate Herendeen,
Area Extension Educator

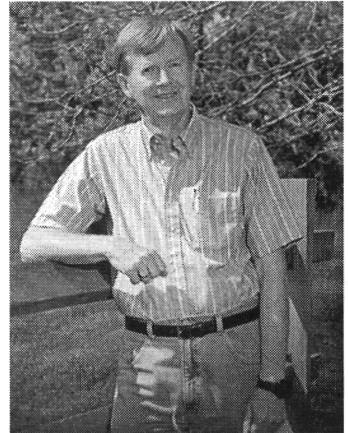
Wheat Weed Control:

October or early November applications of herbicides can be effective in controlling the winter annual complex of winter wheat weeds. This includes corn chamomile (May daisy), yellow rocket (kale), and shepherds purse, wild radish, pepperweed and several other mustard species.

Buctril can be applied at the rate of 1.5 pints per acre when the weed rosettes are at least 1 inch across.

Harmony Extra can be applied at the rate of 0.33 to 0.5 ounce per acre after the wheat has reached the two-leaf stage. It controls wild onion or garlic in addition to the above weed complex. Scouting is essential. Neither of these herbicides is effective except on actively growing weeds. Additional weeds may germinate next spring, but fall control will eliminate the worst group of weeds.

Controlling weeds this fall is much easier than next spring. The weeds are much more susceptible before going



through the "hardening off" process to survive the winter. Also, applying now can make it easier to apply cover crops such as clover next spring or to frost seed forage crops (grasses, alfalfa, birdsfoot trefoil) in March or early April.

Grain Storage

With fuel prices up and commodity prices down, this is a season to pay close attention to drying and storing corn. Excessive drying costs money and is not a good substitute for storage management.

Empty bin preparation: Prepare storage facilities ahead of time. Clean-up old grain debris from bins, handling systems and around buildings. Stored grain pests survive in these areas. Treat empty bins with one of the labeled insecticides. With current restrictions, Tempo is likely the most effective bin treatment, but contact Nate for a more detailed article and list.

If there were previous problems with Indian meal moth, use the Bt (*Bacillus thuringensis*) powder on the bin floor and as a cap-out treatment. It is sold under various trade names. The product Actellic is no longer available. Products containing malathion are not effective against meal moth larvae.

Cool it down: Cool grain to ambient temperature during the storage process and continue cooling as the outside temperature falls. Get the grain down to near freezing by December. Check it every couple of weeks during the winter. Aeration is low cost compared to over-drying. Any time aeration is started, run the fans until the air outflow is the same temperature as the air going into the fan. Aeration is more cost effective than hiring a fumigator next spring or losing value due to grain going out of condition (insects or mold). Call if you need more information on aeration.

Cover Crops

Cover crops are a good investment for a multitude of reasons. If time permits, plant cover crops on any fields that will be open after harvest. Winter wheat, rye or oats can be planted and make significant growth up until mid-October. In this situation, bin run seed is fine. Light incorporation immediately after broadcasting seed will give adequate seed to soil contact. Planting with a grain drill is even better, even if no tillage is done.

The roots of cover crops hold soil in place. The leaves absorb the energy of falling raindrops and reduce erosive forces. Growth takes up soluble nutrients and holds them in organic form. This prevents leaching or runoff in surface water. Cover crops are beneficial for weed control. Decomposition of the cover crop next spring and summer contributes positively to soil biology or soil "health". They are an excellent organic nitrogen source for next year's crop.

The tangible and intangible benefits outweigh the cost of seed, fuel and labor to plant. If weather and harvest schedules permit, make every effort to plant cover crops now.

Soil Testing

Fall is an excellent time to pull soil samples. Again, weather and harvest schedules permitting, make the effort to have fields tested. If soil testing is not a task you can do,

many consultant groups will do sampling for a fee. We recommend sampling one-third of your acreage every year. Results will be in your hands for next year's planning.

Soil sample bags are available at all local offices of Cornell Cooperative Extension. The cost of sample bags and the labor to pull samples is minimal when compared to potential benefits. Knowing the reserves in soils can save thousands of dollars in unnecessary fertilizer expenses.

Any of you who were at the Batavia Crops Research Facility Field Day in August saw this first hand. You had to guess the starter Phosphorus applications on field corn with rates varying from 0 to 40 pounds per acre. This was on a soil testing between medium and high for available Phosphorus on the Cornell soil test system. Some of us saw the same experiment at the Musgrave Research Farm (Cayuga County) with the same results. We will share the data from all locations after harvest.

These experiments are another verification of a system that has been tested and improved over the past sixty years for New York soils. For more information, contact Nate or Mike. ☎



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Crop Production Costs – Corn Grain

By John Hanchar and Nate Herendeen

How often have you asked one or more of the following questions?

- ? Should the dairy farm business purchase or grow feeds?
- ? Should I rent additional ground?
- ? How do I evaluate alternative marketing strategies for crops – for example, forward contracts, futures contracts and, or options?
- ? Should I hire a custom operator to perform operations – for example, harvesting?
- ? What are the purchased and grown feed costs associated with my heifer raising program?
- ? Should I grow a different set of crops?
- ? What changes in cropping practices are associated with improved profitability?

Farm business managers need costs of crop production information to answer these questions. Farm business managers that have attempted to collect and summarize costs of crop production information frequently note the following.

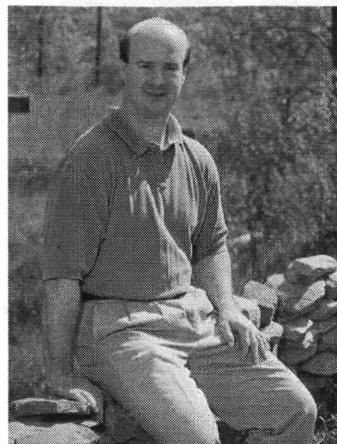
1. How do I allocate labor and machinery expenses among crops?
2. Collecting and summarizing information requires time, effort and other resources – the need for workable tools is emphasized.

About three years ago, the NWNY Dairy, Livestock, and Field Crops Team worked with several producers over a two year period for the purpose of developing and refining workable tools for collecting and summarizing costs of crop production information. One set of tools available at the present time includes the following.

1. Hardcopy record for collecting machinery and labor hours in the field.
2. Electronic spreadsheets for estimating machinery ownership and operating costs by piece of machinery. This is useful when detailed expenses are not available by machinery item from farm business records.
3. Electronic spreadsheets designed to collect and summarize costs of crop production on a field basis. (Please note that a hardcopy version is also available, for those without the required computer resources.)

Late last fall we completed work on a request from one of the region's FSA offices for costs of crop production data. We utilized the tools above to develop estimates. Over the next several issues of AgFocus we plan to report some of the estimates.

In this issue we report costs for corn grain production based upon input prices for the year 2000. A cash grain operation of approximately 1,000 acres producing corn grain, wheat and soybeans in rotation helps to describe the farm machinery complement and practices.



Costs of crop production reflect costs including ownership and operating, cash and noncash costs incurred through harvest. If you would like more information regarding machinery sizes, and cropping practices, please contact John Hanchar.

Costs Estimates – Corn Grain

We estimated the costs of corn grain production at \$292 per acre. Material and services costs for seed, pesticides, and fertilizers among others, but excluding fuel, lube, and machinery repairs and maintenance totaled \$198 per acre. Tractor and other self propelled implement costs totaled \$57 per acre. Costs included ownership (depreciation, interest, taxes, and insurance), and operating (fuel and lube, repairs and maintenance) costs. Other farm machinery costs totaled \$8 per acre. Costs for other farm machinery included ownership costs, and costs for repairs and maintenance. Labor costs estimates were \$29 per acre.

A breakdown of the material costs reveals fertilizer costs at \$48 per acre, seed costs at \$34 per acre, and pesticides costs at \$33 per acre, with the balance allocated to a land charge, soil testing, and interest on operating capital among others.

The analysis tools also allow for summarizing estimated costs by operation. For example, machinery and labor costs estimates for harvesting including hauling totaled about \$54 per acre, while planting, and plowing costs estimates totaled about \$10 per acre, and \$6 per acre, respectively.

If you are asking questions, or considering decisions that require knowledge of costs of crop production, don't let the time and effort required to collect information deter you from looking for ways to obtain information. More importantly, don't avoid considering alternatives and making a decision.

Perhaps some of the tools and information described above can be used to enhance decision making in your farm business. If you want to discuss ideas, alternatives for collecting cost of crop production information or the cost estimates reported above, contact me by phone at (716) 658-3250 extension 112, or by email at jjh6@cornell.edu. ☺

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PROFOUND QUESTION

By Roberta Crill, Area Extension Educator

Foreword: Each month I share a question that was asked of me that seemed out of the ordinary. Some might label this question "a difficult one", but I have chosen to label it the "Profound Question of the Month". I hope readers learn as much as I do every time I answer one of these questions.

Question of the Month: How much effect does lameness have on milk production?

To answer this question, **Drs. Warnick, Janssen, Guard, and Gröhn** at the College of Veterinary Medicine at Cornell University collected data for 1.5 years on two New York dairy farms to investigate the effect of lameness on milk production. The occurrence rates of cows having at least one treatment for lameness in each herd were 52% (1796 cows) and 40% (724 cows). Weekly averages of total milk production per day were recorded based on automated milk weight measurements at each milking.

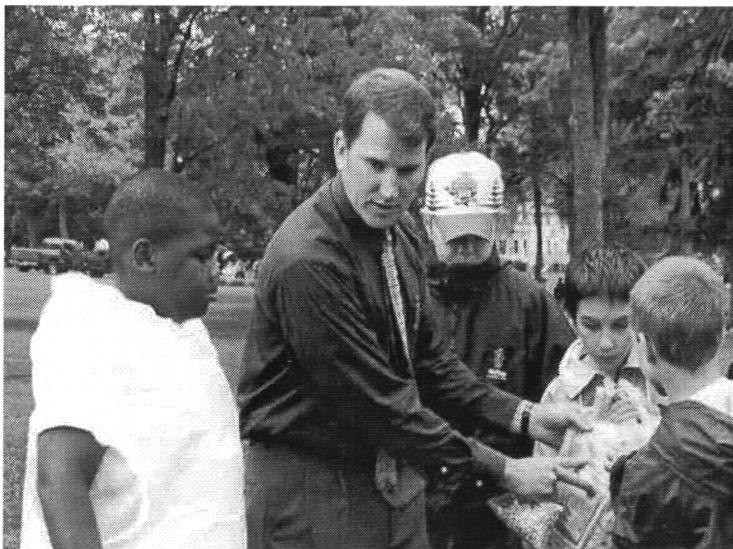
In both herds, milk production decreased significantly for cows diagnosed lame. Milk production was 3.3 pounds per day lower in more than or equal to 2 weeks after lameness compared with cows that had not been diagnosed lame in the

current lactation in the first herd. In the second herd, milk production of lame cows was 1.8 pounds per day lower in the first and second week after lameness and 1.1 pounds per day lower in more than or equal to 3 weeks after diagnosis. Cows in the second or greater lactation and cows with severe cases of lameness tended to have a greater decrease in milk production than younger cows.

In one herd, the decrease in milk production was greater for cows with sole ulcers or foot abscesses than for foot rot or foot warts. Conversely, cows with abscesses or foot rot tended to have larger decreases in milk production in the other herd. The inconsistent results between these two farms may have resulted from differences in how the lame cows were identified and treated by the farm employees and/or professional hoof trimmers. Overall, the older cows and cows with abscesses lost the greatest amount of milk per day.

Condensed from 2001 J. Dairy Sci. 84:1988-1997.

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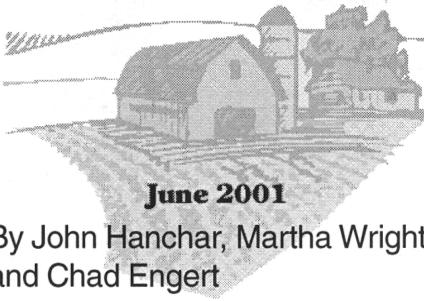
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Comprehensive Nutrient Management on Small Farms in the Northwest New York Region: A Survey of Owner Practices & Attitudes



June 2001

By John Hanchar, Martha Wright and Chad Engert

The Northwest New York Region covers the counties of: Genesee, Livingston, Monroe, Niagara, Ontario, Orleans, Seneca, Wayne and Yates.



As part of efforts to maintain and, or improve water quality, the United States Department of Agriculture (USDA) and the United States Environmental Protection Agency (EPA) have established the following objective.

Owners, operators of animal feeding operators (AFOs) will take voluntary actions to minimize potential water pollutants from confinement facilities and land application of manure and organic by-products.

To achieve this objective, the USDA and EPA through a national strategy seek to accomplish the following goal. It is a national expectation that all AFOs, regardless of size, should develop and implement technically sound, economically feasible, and site-specific comprehensive nutrient management plans (CNMPs) by 2009. USDA, Natural Resource Conservation Service technical guidelines established in December 2000 describe the following components for CNMPs.

- ❖ feed management
- ❖ manure handling and storage
- ❖ land application of manure
- ❖ land management
- ❖ record keeping

Major strategies identified to accomplish the above goal include building capacities for CNMP development and implementation. The Northwest New York Dairy, Livestock, and Field Crops Program in cooperation with owners, operators of small farm businesses and others through a grant from the Northeast Regional Sustainable Agriculture Research and Education Program conducted a survey of owners and operators of livestock farms.

Through the survey the NWNY Program sought to uncover obstacles and identify educational needs that, when met, will enable owners of small farms to develop and implement comprehensive nutrient management plans.

Some initial findings based upon 374 responses received as of May 31, 2001 follow. The results are for those respondents identified as owning, operating a small farm business.

Practices

A little more than 70 percent of respondents from small farms indicated that they sampled soils at least every three years. Regarding feed management, 58 percent and 53 percent of respondents indicated that they balanced rations and tested forages, respectively.

Some of the least frequently implemented practices noted by respondents were: sampling and analyzing manure at 7 percent; use of pre sidedress nitrogen tests at 11 percent; manure and field equipment calibration at 18 percent; and presence of a neighbor relations plan at 20 percent. About 40 percent of respondents indicated keeping a field-by-field record system, or prioritizing fields for manure application based upon runoff potential.

These results suggest that currently some key CNMP component areas are not widely practiced by owners, operators of small farms.

Obstacles, Needs

Farm business owners were asked to identify the resources and/or skills that they would need to develop and implement a CNMP for their business. Survey results show that 70 percent of the owners of small farms indicated that they needed information, while roughly 50 percent indicated that they needed better skills or technical expertise. A little over 40 percent indicated that they would need cost sharing.

Owners of small farm businesses indicated needing skills in the following areas most frequently: manure sampling; record keeping; manure storage and handling design and installation; soil sampling; equipment calibration; and determining proper timing and location of manure applications. These results suggest skill areas on which educational activities should focus.

Preferred Delivery Methods

Approximately 61 percent of the owners of small farm businesses indicated that they would like more information about CNMPs. Farmers were asked how they would like to learn more about developing and implementing a CNMP. About 95 percent indicated that they would like to learn more through written material, while about 40 percent indicated preference for video(s), or via a meeting. About 40 percent indicated preference for home study course(s), or via the Internet.

For those that responded that they wanted more information, about 64 percent indicated that they were at least somewhat interested in a series of 1.5 hour discussions. These results reflect responses to other questions. Results suggest that respondents do not prefer activities that demand an excessive commitment of time, including meeting and travel time, especially during busy times of the year. About 70 percent of respondents agreed that time away from the farm is the most limiting factor for attending meetings. About 40 percent indicated that they had between 2 to 4 hours to spend away from the farm, while a little more than 20 percent indicated that they had less than 2 hours.

Of those that responded that they wanted more information on CNMP, about 60 percent indicated that they were at least somewhat interested in local meetings, or home study courses.

These results indicate the types of activities that would be preferred by owners and operators of small farm businesses as means to: learn more about CNMP; and enhance skills in developing and implementing CNMPs.

One set of results has significant implications for developing and conducting educational activities that seek to enhance producers' capacities to develop and implement CNMPs. The set of results relates to characteristics that farmers consider when deciding to participate in an educational program. Over 80 percent of those respondents indicated that practical farm use, and applicability to small farms influenced their decision to participate in an educational activity.

The voluntary nature of the unified AFO strategy presents a challenge to those developing and conducting educational activities focusing on CNMPs – How do we demonstrate applicability to small farms when, for the present time, efforts are voluntary on the producer's part?

Final Thoughts

A task force, comprised primarily of owners of small farm businesses, reviewed the survey results for the purpose of developing recommendations to guide educational activities in the region. The team will utilize the task force's ideas, and other findings to develop and conduct activities that will enhance producer's abilities to develop, and implement CNMPs.

A more complete reporting of findings from the survey is available from Martha Wright or John Hanchar. If you have comments or suggestions for programming, please share them with Martha, John, or other team members.



Weaning Calves? – Mooing Chorus Is a Sign!

By Martha A Wright,
Area Extension Educator

The cow-calf weaning season is upon us! The mooing chorus that ensues after calves and cows are separated also brings a "heap" of stress. That newly weaned calf has great potential for respiratory disease.

Stress comes in the form of change in diet, location, peers, environment and pathogen exposure. Calves are thrust into that environment. So what do we look for in a sick calf? Here are things to watch for in the first couple weeks after weaning calves.

First know the behavior of your cattle. Are your calves aggressive at the feed bunk? Do they appear alert with ears up and eyes clear? Are they up and eating or hanging back from the crowd? One of the first signs for most producers of illness is for animals to go off feed (decreased appetite). If calves are not eating, their sides will appear "hollow" and/or they will lack of enthusiasm for joining the group at the bunk. Watch for anti-social behavior.

Other signs include depression, fever, coughing and nasal discharge. Watch your calves early in the morning.

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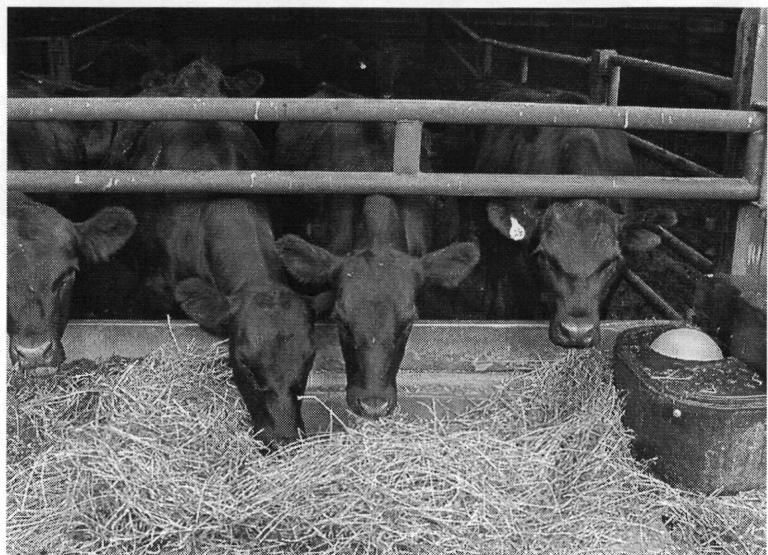
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Do they stretch when they get up? Often times sick animals will not stretch, but hang their heads low and walk in a distinctive slumped motion. Mornings are also the best time to take body temperatures.

Remember, if your cattle have just been vaccinated they will have a slight elevation in temperature, up perhaps 1 degree, for approximately a week. Normal temperatures range from 101 to 102 degrees. Consult with your local veterinarian for the best treatments. They are knowledgeable about new treatments and products as they become available.

If you wait till your calves have rapid breathing, hard labored breaths or are showing signs of dehydration, it is often too late to save that calf. Know your cattle, learn their behavior and investigate if they are behaving differently than average. Above all, consider vaccinating your calves twice (killed product) before weaning to give them a fighting chance at this stressful time of year. The old adage, "The eye of the master fattens the cattle", applies at this time of stress.



Dry grass hay is an excellent starter ration for weaned calves. Introduce concentrates gradually.

Managing Your Profit in 2001 Can We Impact 2002 and Beyond?

By Jason Karszes, Farm Management Specialist, PRO-DAIRY, Department of Applied Economics and Management Cornell University

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All indicators point to a good year for profits in the dairy industry across New York State. Milk prices have rebounded from last year's average price for the year and are approaching 1999 levels. Many projections are for the price to remain strong for the rest of 2001.

Weather has not been kind to cows with several periods of heat stress during the summer. But, many farms are reporting that milk production is rebounding from last year's low production due to the poor forage quality. This year's weather has allowed better quality hay and haylage to be harvested and the corn crop started off well. One concern so far this year is the lack of rainfall that has impacted hay yields and is impacting corn yields.

With all these signs pointing to a potential for good profits and strong cash flow in 2001, questions arise about profits for 2002. Will the continued strong milk price, low feed costs, and sufficient quality and quantity of forages across the nation increase the milk supply? Will the increased cost to consumers for dairy products and the slow recovery in exports decrease the demand for U.S. dairy products? Export recovery may be affected by several factors: high milk prices, increased competition from other dairy producing regions, strong U.S. dollar vs. other currencies, and slow economic recovery by many of the major U.S. trading partners, such as Japan and Latin America.

One last major question remains: Will there be a sufficiently large improvement in quality and quantity of forage around the country to allow milk production per cow to recover? With many people thinking that these things are

occurring, milk prices for 2002 or 2003 could be significantly lower than 2001. Once again farms could be put in tight financial positions similar to the summer of 2000.

Questions to ask

To get ready for this potential in 2002-03, determine if profits and cash generated in 2001 can be used to position your business to handle the decrease in milk price. Can your farm remain profitable and meet cash commitment needs? Ask yourself two questions. What can I do over the remainder of the year that will increase profit generation through increased production or lower costs in 2002? What can I do over the remainder of the year to increase my ability to meet cash commitment challenges in 2002?

To answer the first question, know what is going on within your business. How are you generating revenue and what is it costing? By analyzing your business, you may identify some area(s) where a few changes may lower your cost to produce milk or maintain cost but produce more quantity. Examples of this are changes that affect labor efficiency, feed program, fertilizer use, and culling decisions. One approach is to carefully analyze your five largest expense items and determine if you are receiving the greatest return for that expense.

Before making a change, carefully analyze it to determine if it meets long-term business goals. The decision has to make sense for next year, when the returns may be significantly lower, not now when returns may be higher than average. You don't want to make long-term cash commitments based on short-term cash excess or cash generation. Also, don't make this change for tax savings only. If an investment does not make long-term sense for profitability, then the one-year tax savings is likely not enough to justify the investment or change.

The second question, what can I do to maintain my ability to meet cash commitments throughout 2002 deals more strictly with cash flow budgeting and positioning your business. If you are not already projecting future cash needs, start now. While not always accurate, budgeting cash needs for the next 12 months allows you to spot areas where you need to generate additional income or minimize expenses. With a thorough monthly cash projection in hand, it is easier to determine which of the following tools can be used to handle what may be in store for 2002. The two following tools can be particularly useful.

Build up working capital:

Working capital is cash or current assets that can be turned into cash relatively easily without negatively affecting your business. It may also be assets that can be used instead of spending cash.

For dairy producers, several areas can affect working capital and improve their ability to meet cash needs. First, supplies such as feed, seed, fertilizer and diesel fuel can be bought in advance and then used in 2002. By building these inventories now, you avoid spending cash next year for these items. If you can also buy these kinds of supplies at a good price, then you may lower your cost to produce milk. This increases your potential to generate profits. This tool allows you to build up cash reserves for months when cash income may not be sufficient to meet monthly bills.

Building borrowing capacity:

By paying down debt or making improvements out of cash flow, you may increase the amount of borrowed capital that is available to you from lending institutions. By paying down debt, you may have the option to borrow this money back when needed to meet operating expenses. This is especially true if you can pay down operating debt and enter 2002 with little or no operating carryover. By making improvements to your business out of cash flow, you may be increasing its debt carrying capacity and its collateral position. This may allow you to borrow funds when needed.

When considering either of these two tools, talk with your lender and review policies towards lending additional capital to your farm for operating expenses. If you have a good working relationship with your lender, it may make better sense to pay down as much additional debt as possible instead of building up cash reserves to borrow back money when needed. If your lender is unwilling to loan additional funds even though debt has been paid down, then it may make more sense to build up a cash reserve.

Tax impacts

Don't forget the tax implications that this year might bring and the impact that some of these decisions will have on the amount of tax owed. Tax planning can be used to minimize the taxes that will be owed in 2002 for the 2001 business year.

Work with your tax accountant and determine what impact different decisions will have on taxes and what your total tax bill will be. With this information, you can better plan your cash needs for next year. Waiting until February or March to determine your tax bill can severely impact cash flow and disrupt your ability to meet planned cash needs. While planning for taxes can minimize the cash needed to pay the income tax bill, it is important to remember your long-term business goals.

Coming off what hopefully has been a good year is no time to rest on your laurels. Projections for next year are only projections and a financial crunch may not actually occur. But a good planner prepares for every eventuality to minimize its potential impact. By planning for financial stress, you also increase your business' ability to take advantage of opportunities that arise. 

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Environmental Conditions in Calf Greenhouse Facilities

Condensed from C.A. Gooch and Scott F. Inglis

A fourteen-month study (August 1999 to September 2000, funded by Cornell's PRO-DAIRY program) was conducted with the primary objective to quantify the environment in four similar New York State greenhouses. These structures housed pre-weaned and recently weaned dairy calves. A secondary objective was to assess the effects of the environment on calf growth, health, and rearing costs. Some of the health data is also presented.

Four calf greenhouse barns (2-4 row and 2-2 row) on separate dairy farms of similar management style were monitored in the Finger Lakes Region of New York. All farms were within a 30-mile radius and weaned Holstein calves (3 farms) or Brown Swiss or mix-bred calves (1 farm) at approximately 8 weeks of age.

Characterization of the ventilation system for each calf greenhouse was accomplished by monitoring dry-bulb temperature, black globe temperature, and humidity at multiple inside and outside locations. Interior locations were chosen that best represent the microenvironment experienced by the calf. Exterior locations were chosen to reflect ambient air conditions.

Environmental Conditions

Summer conditions

During the summer months, concern exists with overheating of the air within the greenhouse and with excessive solar radiation passing through the plastic film that covers and warms the calves. The average hourly black globe humidity index (BGHI) for the month of August 2000 is shown in Figure 1. BGHI plots for other summer months showed similar trends and comparisons between structures, but with less daytime peak magnitudes. Structure No. 3 had the highest BHGI inside/outside differentials and the lowest interior BGHI values in the afternoon hours. Structure No. 3 had well managed curtains, relatively little obstruction blocking prevailing summer winds, and had a white plastic film covering overlaid with shade cloth material on the western side.

The BGHI value exceeded 75 on average from 9:30 a.m. to 5 p.m. for structure No. 2 (worst case) and from 11 a.m. to 3 p.m. for structure No. 3 (best case) indicating that the environments were experiencing border line heat stress.

Fall – winter inside warming sequence

The average hourly inside black globe/dry bulb temperature differentials for the month of September 1999 are shown in Figure 2. Positive ordinate numbers indicate a higher black globe temperature than dry-bulb temperature. The graph shows approximately a 4°C differential between black globe and dry bulb temperatures during peak solar hours for all structures. There was an increased early morning solar heat gain in Structure No. 4 above that experienced in the other greenhouses. This was presumably due to incident solar radiation striking the sidewall below the shade cloth.

Structure No. 1 had a less solar heat gain in the morning hours when compared to the other structures due to its orientation (E-W vs. N-S for others) and the presence of morning shade provided by an adjacent structure. Structure Nos. 2 and 3 also experienced comparatively increased solar heat gain in the morning hours due to the lack of shade cloth on the East side.

In the afternoon hours, Structure No. 3 had a reduced solar heat gain when compared to that experienced by the other structures presumably due to the presence of shade cloth on the western side.

Daytime solar heat gain occurred in each structure during all months to various degrees. All structures developed a daytime summer environment that was borderline heat stress as indicated by the black globe humidity index values calculated. Overall, the presence of clear plastic film covered with shade cloth or white plastic film without shade cloth appeared to work equally well at providing protection from the summer sun.

Look in November for the Calf Data.

Figure 1. Average hourly black globe humidity index for August 2000.

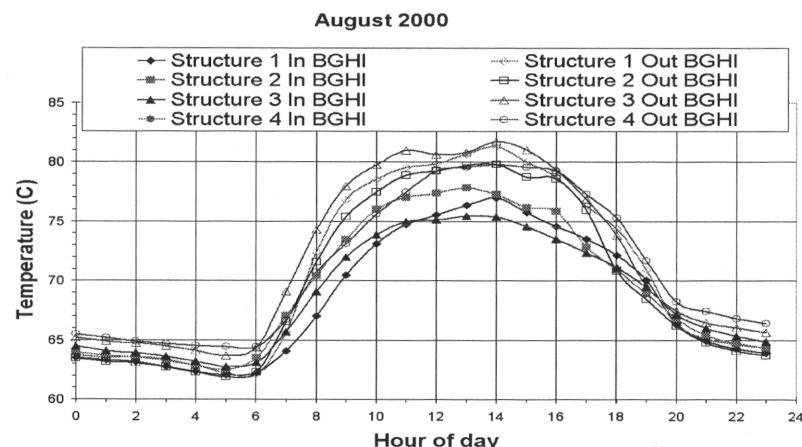
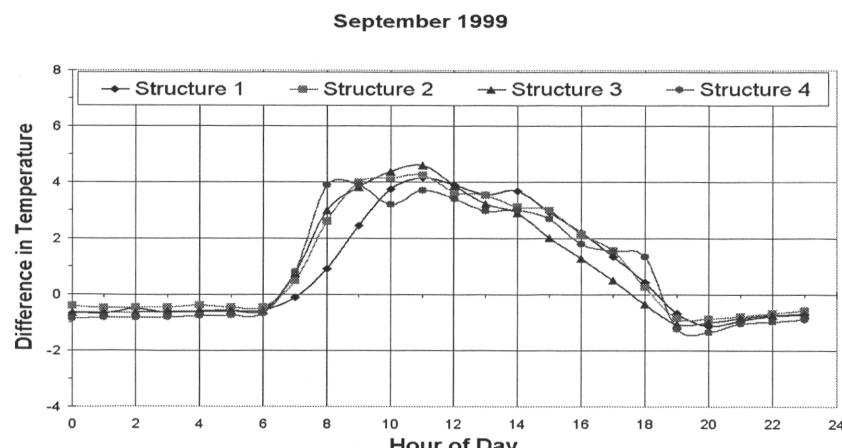


Figure 2. Average hourly inside black globe/dry bulb temperature differentials for September 1999.



Cornell Cropware is Here!

By Nancy Glazier, Technical Associate

The Cornell University Cropware nutrient management software program has been released. This has been an ongoing project at Cornell for many months undertaken by several individuals. The origins of the new program were in Stu Klausner's Comprehensive Nutrient Management program; this program goes quite a bit farther with soil leaching and run-off added in. Manure storage capacity can be calculated using the software, along with wastewater usage, manure produced based on computer-generated animal units.

The software is available to anyone free of charge, however user training is strongly recommended. To download a copy, you can go to: <http://128.253.135.170/CuNMP/ON-LINE.HTM>, or <http://www.css.cornell.edu/nutmgmt/index.html>. Downloading is only recommended if you have faster than 56k (modem) capabilities. To receive a CD version by mail, call to get a copy of the program from Michelle Cole at 607-255-7712. To get answers to questions about the program, call Caroline Rasmussen at 607-255-2875.

The generated reports are only as accurate as the data that is entered. To help with data collection, an 18-page form is provided. Tutorials and extensive help section are provided with the software. The most help needed may be in collecting the necessary data. Cornell will begin to provide training on an as needed basis (groups) starting in January. If you are interested in training sooner and at a local level you may contact Nancy Glazier.

LIVESTOCK CORNER

By Martha A. Wright, Area Extension Educator

Beef

Environmental Quality Publications on the web: Some very interesting articles.

<http://muextension.missouri.edu/xplor/envqual/index.htm>

Cornell and Penn State have jointly hired **Tom Lonczynski as an Extension Associate in the meats area**. Tom has significant experience working with owners and managers of slaughter and meat processing plants to ensure that they meet federal and state health regulations and to improve efficiency. Tom's email address is tcl116@psu.edu and he can be reached by telephone at: 570-401-0523 or 814-863-3666. His mailing address is:

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Sheep

The Sheep Book: A Handbook for the Modern Shepherd

has been revised as of August 15, 2001. Since it was first published in 1983, The Sheep Book has become a modern

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staple of many small and moderate-scale sheep raisers. In this revised edition Parker updates many aspects of sheep stewardship, such as new or newly banned medications, progress in reproductive technology, popular new sheep breeds and the growing dairy sheep field. Updated nutrition tables, as well as e-mail and Web addresses, further enhance the book's sensible advice. The Sheep Book retails for \$24.95 per copy. Look for it at your favorite bookstore or online source.

Swine

The search for low-cost animal housing has created a great interest in so-called hoop structures, or hoop shelters, as facilities in which to grow pigs from about 60 pounds to market weight. Hoop structures can be used successfully in such grow-finish operations, but producers need to be aware of the advantages and disadvantages of this type of housing. Looking for an interactive web site to evaluate swine alternatives, try:

<http://muextension.missouri.edu/xplor/agguides/ansci/g02504.htm>

Another interesting site: Composting swine mortalities
<http://muextension.missouri.edu/xplor/envqual/wq0351.htm>

Agricultural Calendar

Oct

18 ADA & Dairy Council, Inc. Annual Mtg. @ Sennett Federated Church, Sennett, NY Contact: Margaret Patsos 315-568-8515

23 Pasture Walk @ Mehlenbacher Farms Wyoming Co. Contact: Nate

Nov

1 Field Crops Dealer Mtg. @ Batavia Party House Contact: Nate

2 Field Crops Dealer Mtg. @ Auburn Contact: Mike

16 Feed Dealer's Mtg. @ CCE, Batavia Contact: Roberta

Dec

5 Tax School @ Batavia Party House, Stafford, NY Contact: John

6 Tax School @ Holiday Inn, Waterloo, NY Contact: John

Contact a Team Member:

If you would like to contact a team member by phone or e-mail use one of the following numbers:

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Genesee County - Batavia
716-343-3040 ext. 133

Monroe County - Rochester
716-461-1000

Orleans County - Albion
716-589-5561

Yates County - Penn Yan
315-536-5123 (Phone)

Or visit us on-line at:

[www.cce.cornell.edu/programs/
nw-ny-dairy-fieldcrops/](http://www.cce.cornell.edu/programs/nw-ny-dairy-fieldcrops/)

Annual District American Dairy Association & Dairy Council Meeting

The District 12 ADA and Dairy Council, Incorporated is having their annual meeting at the Sennett Federated Church in Sennett, NY on the 18th of October at 7:30 P.M. This meeting will primarily focus on the latest developments in milk promotion and recent commercials.

Contact Margaret Patsos at 315-568-8515 by October 12 for reservations.

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