SCNY Dairy & Field Crops Digest

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South Central New York Dairy & Field Crops Team

HOME PAGE FEATURES ANNOUNCEMENTS AND UPCOMING EVENTS


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GRAINS

The South Central New York Dairy & Field Crops is Your Trusted Source for Research-Based Knowledge

Announcements

Immature Corn Silage from Larry Chase

In some parts of New York, the 2013 corn crop may not reach normal maturity. There may be small ears, poor grain fill or even no ears on the corn plant at the time of harvest. We have seen this same situation in previous years. The following points may be helpful as you work with immature corn that will be harvested for corn silage. For the full article check it out on our website:"http://nydairyadmin.cce.cornell.edu/pdf/submission/pdf272_pdf.pdf

Fall Alfalfa Harvest Guides per Jerry Cherney, NYS Forage Agronomist

With a shortage of good forage, should farmers be trying to get 4 cuts of alfalfa/grass this year? There may be enough moisture to consider 4 cuts, there is some risk to the stand. The attached article has two methods of estimating the risk.

1. Table 1, Figs. 1 & 2. Our long time recommendation of 500 GDD (C) between the last 2 cuts. The time interval can be from 5 to 8 weeks (Table 1), depending on when the last cut is made. The graphs show you the 30-year historic weather data window (shaded area) where you should not be cutting, to accumulate 500 GDD between 3rd cut (y-axis) and final cut (x-axis). The red line represents GDD accumulation in an average year.

The complete article is attached. http://nydairyadmin.cce.cornell.edu/pdf/submission/pdf274_pdf.pdf

CAFO Update: Information for Dairy Farms under 300

After several months of discussion and public vetting, NYS officially changed CAFO Permit regulations that affect dairy farms with 200-299 milking cows. The new rule was published on May 8, 2013 and became effective immediately. For farms that are already in this size range, or thinking about growing into it, here's what dairy producers need to know: details

Upcoming...

Academy for Dairy Executives

November 13 – Nov. 14, 2013
noon to noon, Virgil, NY

The Academy for Dairy Executives is an educational opportunity for progressive dairy executives. The program is designed to provide dairy executives and agri-service personnel the opportunity to increase their knowledge of the leadership and management skills necessary to run a successful dairy in these volatile times. The Academy provides a forum for producers to learn and interact with each other and the presenters during three one-night sessions over 10 months. The program is designed to enhance understanding of the fast-changing dairy industry. By coming to this program, you will continue to develop the necessary leadership and business management skills to lead your dairy business into the future. view details

Gear Up for Corn Silage Harvest

Janice Degni, Area Extension Field Crops Specialist

September has brought storms with plenty of rain, a final round of sweltering heat and humidity as well as early frost warnings. Although corn started pollinating in mid-late July, the ears have matured slowly. The cooler weather that followed the mid-summer heat wave came directly after pollination and slowed ear development in corn and pod fill in soybean. It was early August before I found corn beginning to dent. By the time this newsletter hits your mailbox you will want to be geared up for harvest.

Throughout the summer we have had a growing occurrence of *Northern Corn Leafblight*, a disease that kills leaf tissue (details p. 7). It's most likely the cause of the brown, dead leaves along the edge of your field although nitrogen and potassium deficiencies were pretty widespread earlier in the season and responsible for leaf dieback. Although you have dead and dying leaf tissue use whole plant moistures to guide your harvest timing.

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SEPTEMBER 2013
Cornell Cooperative Extension South Central NY Dairy & Field Crops Program

The Academy For Dairy Executives

Developing Leadership and Management Skills for Young Dairy Professionals

Topics Covered in 3 Sessions Over 5 months

Now accepting applications for Central New York Academy to begin November 2013

Family Business Management and Communication
Financial Assessment
Budgeting and Decision Making
Building Effective Employee Teams
Business Risk Management
Strategic Planning

For more information, visit www.ansci.cornell.edu/prodairy/academy or contact Betsey Howland at BLH37@cornell.edu or (607) 592-6222.

Applications Due October 10, 2013

Cornell University

PRO-DAIRY

We are pleased to provide you with this information as part of the Cooperative Extension Dairy and Field Crops Program serving Cortland, Chemung, Tioga and Tompkins Counties. **Anytime we may be of assistance to you, please do not hesitate to call or visit our office.**

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NYS Announces the dairy acceleration program

More information online at:
http://ansci.cornell.edu/prodairy/dairy_acceleration/
http://www.governor.ny.gov/press/08192013-aid-for-farms

Governor Cuomo, in partnership with the NYS Department of Agriculture and Markets and the NYS Department of Environmental Conservation, has announced the Dairy Acceleration Program.

This program is designed to enhance profitability of New York dairy farms and to maintain a commitment to environmentally responsible growth. The program will be delivered in collaboration with Cornell PRO-DAIRY and Cornell Cooperative Extension.

Eligible projects assist New York dairy farmers to develop business plans for successful and environmentally responsible growth. Funds may be used for creation of strategic business plans focused on growth, design of new or remodeled facilities, or development of environmental and farmstead plans. Farms must have lactating dairy cattle.

Eligibility:

- Must be a dairy cattle farm
- Must have complete financial records for business planning
- Preference is given to farms with under 300 cows
- Must complete and submit an application

Dairy Acceleration Program funding covers 80% of a project's cost. The farm is responsible for 20%, of the project cost, which is paid directly to the service provider, including any in excess of established limits.

Funding may include:

- Up to $5,000 per farm to write a business plan or to develop a combination of a business and facility growth plan
- Up to $6,000 to develop a new Comprehensive Nutrient Management Plan (CNMP) for farms under 300 cows
- Up to $4,500 to update an existing CNMP for farms under 300 cows
- Up to $3,600 for an initial and combined evaluation of financial an environmental needs of the farm for farms under 300 cows

Business planning to account for the cost of environmental improvements associated with growth of the dairy is encouraged.

Agri-business personnel who wish to provide services for the Dairy Acceleration Program should contact Caroline Potter for more information at cjh42@cornell.edu.

For more details visit the DAP Web site at:
http://ansci.cornell.edu/prodairy/dairy_acceleration/.

"FROM RECIPE TO MARKET"

Wednesday Oct 23rd, 9am-4pm
Cornell Cooperative Extension of Broome County, 840 Upper Front St, Binghamton, NY

A one-day workshop for new food entrepreneurs presented in collaboration with the New York State Food Venture Center.

Is your recipe ready to go to market? If your goal is to launch a specialty food business, then this program is for you. This one-day seminar will provide future food entrepreneurs with a grounding in food business basics, and knowledge of the critical issues to consider before starting a food processing business.

Program:
Food Business Basics Marketing: Developing a Strategy, Objectives, Research, and Communication Plan Panel Discussion with Local Food Entrepreneurs followed by Questions and Answers.

The NYS Food Venture Center Market Trends and Product Development Regulatory Agencies and Requirements Food Safety, Processing, Packaging and Labeling.

Presenters:
Speaker TBD: *What lenders are looking for*
Laura Biasillo: *Agricultural Economic Development Specialist, CCE-Broome*
Dr. Olga Padilla-Zakour: *Associate Professor of Food Processing; Director of the New York State Food Venture Center and the Northeast Center for Food Entrepreneurship at Cornell University*
Ann Supa & Vicki Giarratano: *Extension Educators - Food Safety & ServSafe, CCE-Broome*

Workshop cost is $50, lunch and refreshments are provided. To register and pay with credit card, visit: https://reg.cce.cornell.edu/recipetomarket_203. You can also register by phone at (607) 584-9966. For more information, contact Laura Biasillo at CCE-Broome: (607) 584-5007 or lw257@cornell.edu.

(Continued from the cover)

Kernel milkline gives us a gauge of when to start sampling and testing. There have been season long stresses on corn. The early season losses of nitrogen and long-term saturated soil conditions and the incidence of disease may all contribute to dryer plants and weaker stalks. The long term weather prediction for fall is cool and wet. And we've certainly been experiencing that. The upshot is that you may want to get started on corn silage harvest ahead of ideal plant dry matters. You have to consider how many days or weeks silage harvest takes you and the risk of fighting with mud during harvest. If you plan to harvest grain you might want to depart from your standard pattern. Assess your fields for maturity, potential yield as silage or grain and stalk strength as well as field drainage. The growing degree day summaries for different sites across the regions along with the *Corn Maturity Staging* Chart (#3) to help predict plant maturity may come in handy as you plan your harvest strategy. I am also available to offer a second opinion.

1. Cumulative Growing Degree Days (base 50) through September 10 by Site and Start Date*

	April 22	May 1	May 15	June 1	June 15
Binghamton Airport	2058	2044	1943	1754	1600
Chemung	2144	2129	2035	1846	1646
Freeville	1858	1847	1763	1600	1452
Ithaca-CU	2013	1997	1893	1714	1550
Owego	2048*	2041*	1959*	1772	1602

*3 days maximum missing data

*5 days maximum missing data

2. Average GDD Accumulation for Corn Development in NY

Growth Stage	80 day hybrid	110 day hybrid
Emergence	110	110
Silk Stage	1,100	1,400
½ Milk Line	1,800	2,400
Blacklayer	1,900	2,500

3. Influence of Corn Maturity on Grain Yield, Whole Plant Silage Yield and Moisture Content

			% Max Yield		% Moisture	
Maturity Stage	**Avg cal Days To Maturity**	**GDU to Maturity**	**Grain**	**Whole Plant**	**Grain**	**Whole Plant**
Silk	50-55	1100-1200	0	50-55	---	80-85
Blister	40-45	875-975	0-10	55-60	85-95	80-85
Late Milk	30-35	650-750	30-50	65-75	60-80	75-80
Early Dent	20-25	425-525	60-75	75-85	50-55	70-75
Full Dent (1/2 Milkline)	10-15	200-300	90-95	100	35-40	65-70
Blacklayer	0	0	100	95-100	25-35	55-65
Assumes 20 GDU/day to maturity. Adapted from Carter, P.R. 1993. Pioneer Hi-Bred International, Inc.						

Late Cutting Hay Crop

Jerry Cherney our Extension Forage Agronomist at Cornell has written an article summarizing methods for estimating risk of negative stand impact from fourth cutting. It is posted on our webpage. You can get to it from the *Announcements* section.

Forage Inventories

We should end the year with better forage inventories than the last couple of years even if all of it isn't top quality. I've received lots of calls regarding value of standing crop so I know there is extra out there to purchase. If you need extra forage, chances are the best price you can negotiate will be at harvest so evaluate your inventories and take advantage of the harvest season. Some good resources for inventory assessment can be found at: http://www.uwex.edu/ces/crops/uwforage/storage.htm#Forage Inventory.

Pricing Standing Corn

I was totally unprepared to answer the first request for standing corn prices. It's hard to provide a fixed dollar value. It's not like there is a CBOT (Chicago Board of Trade) value for forages. There are several things to evaluate when arriving at a fair price for standing corn.

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How does the crop look – color, grain: stover ratio, anticipated yield? How bad do you need the forage? But the clincher this year is where will the price of grain settle, not only at harvest but for the next 6-12 months? Current futures contracts for harvest, price corn around $4.67/bu and into the low $5's though next April. That would put finished silage between $37.50 and $55/ton. (Using thumb rule: 7.5-10 times the value of a bushel of corn.) The buyer of standing corn would subtract harvest costs and shrink from that. The tables on page 5 & 6 offer expanded detail. There are several very good spreadsheets available on line. Links are available from our webpage under BUSINESS and then select Decision Tools.

For the seller; What is your cost of production per acre? What is the field's estimated yield? What's the difference between your harvest (drying and delivery) costs, marketing options and the buyer's offer?

Description of Kernel Growth Stages and Development

Stage	Description
Silk	Silks are emerged and tassel is shedding pollen.
Blister	Within two weeks after silking, kernels are white on the outside and resemble a blister in shape. The cob is close to or at full size.
Milk	By the end of third week after pollination, kernels display a yellow color on the outside and the inner fluid is milky-white due to accumulation. Kernels taste like "sweet corn".
Soft Dough	Starch accumulation continues into the fourth week as the milky inner fluid now thickens to a pasty consistency. Kernels begin to taste more like "cow feed". Kernels have accumulated close to half their mature weight. Some dents are now visible at the attachment (butt) end of the ear. The interface between the hard starch above and the milky, liquid material below is termed the milkline.
Early Dent	Visible dent on 95% of the kernels.
1/3 Milkline	The milkline is about 1/3 of the way between kernel crown and tip. **Whole plant moisture is ideal for bunker silo storage at approximately 68-72% moisture.**
Full Dent	All kernels are dented. Kernels easily cut with a fingernail. It takes approximately 10 days to go from full dent to 1//2 milkline.
½ Milkline	Milkline is about ½ the distance between the kernel crown and tip. About 95% of the grain yield potential has been achieved. **Whole plant moisture is ideal for ensiling in a tower silo at approximately 63-68% moisture.**
¾ Milkline	Milkline positioned ¾ of the way from kernel crown to tip. Whole plant moisture is between 63-68% depending upon hybrid.
Mature (blacklayer)	All milk has disappeared from the kernel. The hard starch has advanced completely to the cob with a brown or black abscission layer developing at the tip of the kernel. The black layer formation occurs progressively from the tip ear kernels to the basal kernels of the ear. The black layer is caused by the collapsed and compression of several layers of cells near the tip of the kernel. Environment (cool weather) can cause premature blacklayering. Harvest of High-moisture corn should be delayed until black layer (and proper ensiling moisture depending upon structure). Whole plant moistures will be below 60% and not suitable for proper corn silage compaction and fermentation.
Adapted from Corn Management and diagnostic Guide. Pioneer Hi-Bred Int., 1987 (28) and Pioneer Crop Insights. March 1994.	

Worksheet for Buying and Selling Corn Silage: What's A Fair Price?

1.) Base price at 65% moisture ..... $_____ / ton

… 7 to 9 times the price of shelled corn…$6.00 x 8 = $48 / ton

… cost + return…$550 ÷ 15 ton/a + 10% = $39 / ton

… 1/4 to 1/3 price of baled hay…$180 x 0.25 = $45 / ton

2.) Adjusted price for moisture (see table below) ..... $_____ / ton

Base Price ($ / ton as fed) at 65% moisture									
% Moisture	$20	$25	$30	$35	$40	$45	$50	$55	$60
72%	$16	$20	$24	$28	$32	$36	$40	$44	$48
70%	$17.14	$21.43	$25.71	$30	$34.29	$38.57	$42.86	$47.14	$51.43
68%	$18.29	$22.86	$27.43	$32	$36.57	$41.14	$45.71	$50.29	$54.86
66%	$19.43	$24.29	$29.14	$34	$38.86	$43.71	$48.57	$53.43	$58.29
65%	$20	$25	$30	$35	$40	$45	$50	$55	$60
64%	$20.57	$25.71	$30.86	$36	$41.14	$46.29	$51.43	$56.57	$61.71
62%	$21.71	$27.14	$32.57	$38	$43.43	$48.86	$54.29	$59.71	$65.14
60%	$22.86	$28.57	$34.29	$40	$45.71	$51.43	$57.14	$62.89	$68.57
58%	$24	$30	$36	$42	$48	$54	$60	$66	$72

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3.) Quality adjustment factor for maturity ..... x _____ %

Corn growth stage	Dairy herd below 80 pound average	Dairy herd above 80 pound average
pre-tassel	90%	80%
silk	80%	70%
soft dough	85%	80%
early dent	90%	87%
1/2 kernel milk line	100%	100%
black layer	90%	90%
Source: Darby and Lauer, 2002…see attached graph		

4.) Final price adjusted for moisture and quality ..... = $_____ / ton

If the buyer is responsible for harvesting, then use the following custom rate guides to establish credit toward the final payment.

Custom Rates: Selected Farming Operations, Pennsylvania, 2012-2013

Job	Basis of Charge	2013 *(Dollars)*				2012
		Mountain Section	Valley Section	Range [2]	State	State *(Dollars)*
Harvesting:						
Corn Picking	Acre	32.40	23.40	15.00-40.00	27.30	26.70
Corn Combining	Acre	33.80	32.30	29.00-36.00	32.60	32.20
Corn Drying *(23 Percent)*	Bu.	0.47	0.50	0.15-0.95	0.49	0.47
Combining Small Grains	Acre	33.30	31.80	27.50-35.00	32.10	31.60
Combining Soybeans	Acre	35.10	32.20	30.00-35.50	32.70	32.30
Hay Making:						
Mowing	Acre	14.60	16.30	12.00-20.00	15.80	15.10
Mowing & Conditioning	Acre	19.70	16.60	12.00-22.00	17.40	16.10
Raking	Acre	10.50	9.25	5.75-14.75	9.55	9.00
Small Square Baling	Bale	0.98	0.89	0.45-1.75	0.92	0.81
Cut, Rake, Bale & Store	Bale	2.15	1.90	1.14-3.00	2.00	1.80
Large Round Baling	Bale	8.35	7.30	5.50-10.00	7.70	7.40
Size	Lbs.	872	830	600-1,100	848	839
Large Square Baling	Bale	8.15	8.35	6.50-11.00	8.35	8.35
Size	Lbs.	768	801	600-1,100	797	791
Wrapping Bales	Bale	6.95	6.80	4.25-9.25	6.85	6.80
Silage Making:						
Pull-Type Chopper & Tractor	Hour	86.00	95.00	70.00-100.00	92.00	88.80
Self-Propelled Chopper	Hour	250.00	246.00	150.00-350.00	247.00	247.00
Less than 365 HP	Hour	-	-	125.00-290.00	220.00	204.00
Greater than 365 HP	Hour	-	-	200.00-400.00	281.00	281.00
Blower	Hour	*NA* [1]	16.60	10.00-30.00	17.00	15.50
1 Man, 2 Wagons, 1 Tractor	Hour	*NA* [1]	81.80	45.00-100.00	80.60	68.00
2 Men, 2 Wagons, 2 Tractors	Hour	*NA* [1]	140.00	85.00-168.00	134.00	115.00
1 Man, 1 Truck	Hour	64.10	76.40	57.90-80.00	74.10	66.00
Field Chop, Haul & Fill Silo	Ton	*NA* [1]	7.90	4.00-13.50	8.30	8.95
Bagging Silage	Foot	*NA* [1]	4.55	2.75-7.50	4.85	5.05
Less than 9.0 ft	Foot	-	-	2.00-7.50	4.55	4.60
Greater than 9.0 ft	Foot	-	-	4.00-7.50	5.15	5.95

"Forage Sorghum" – Viable Crop? – Come and See the Crop!

Sept. 18 5 pm to 7:30 pm
Dave Stow, 1223 Breesport – N. Chemung Road, Lowman, NY 14861

Sept. 19 5 pm to 7:30 pm
Dennis Birdsall, 7303 State Route 41, Homer, NY 13077

At these twilight meetings:
*Enjoy a light dinner *Learn about establishment practices
*See the sorghum crop for yourself *Farmer Cooperators will share their experience.

Pre-registration is requested to help with meal planning. There is no charge for these meetings. RSVP: Sharon VanDeuson (607) 753-5078 or shv7@cornell.edu. For more information contact Janice Degni, (607) 753-5215 or jgd3@cornell.edu.

Northern Corn Leaf Blight
Diseases of Corn

Kiersten Wise, Purdue Extension

Northern corn leaf blight (NCLB), caused by the fungus *Exserohilum turcicum*, is an increasingly important disease in the U.S. Corn Belt. The disease has appeared annually in Indiana, and has increased in prevalence since the mid- to late 2000s.

NCLB can cause yield loss if it develops before or during the tasseling and silking phases of corn development. Hybrid susceptibility, cropping practices, and weather strongly influence disease development.

This publication describes:
1. How to correctly identify the disease
2. Conditions that favor disease development
3. The impact of the disease
4. How to manage the disease

Figure 1. Long, narrow lesions that run parallel to the leaf margin are early symptoms of NCLB.

Figure 2. Oblong lesions develop on leaf tissue after infection by the NCLB fungus, *Exserohilum turcicum.*

Identifying the Disease
Early NCLB symptoms appear as long, narrow, tan lesions that form parallel to leaf margins (Figure 1). As these lesions develop, the classic symptoms of NCLB will be observed: long, oblong, or "cigarshaped" tan or grayish lesions (Figure 2).

The lesions produce olive-green or black fungal spores when humidity is high, which can give the lesions a dark or dirty appearance. The spores are visible if one examines lesions with a hand lens (Figure 3). The lesions range from 1 to 7 inches long, depending on hybrid susceptibility. Multiple lesions may form on a leaf, and lesions can coalesce to form large, irregular areas of dead tissue on the leaves.

Figure 3. Within NCLB lesions, fungal spores form, which can be viewed with a hand lens.

Disease symptoms vary by hybrid susceptibility. There are several genetic types (or races) of the *Exserohilum turcicum* fungus. Hybrids with partial resistance to NCLB typically produce fewer and smaller lesions, and fewer fungal spores. On hybrids with race-specific resistance, lesions are small and yellow and produce no spores (Figure 4). NCLB lesions may also appear on the leaf sheaths and husks of susceptible hybrids.

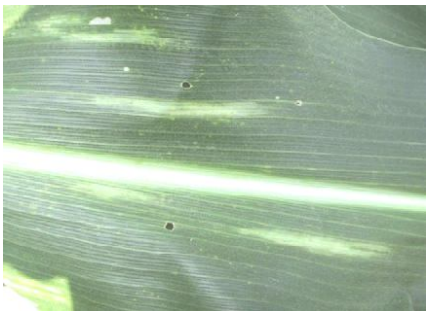

Figure 4. Hybrids with resistance to NCLB will have smaller lesions that may not **produce fungal spores.**

NCLB symptoms may be confused with symptoms of other foliar fungal diseases such as Diplodia leaf streak, southern corn leaf blight, and Stewart's or Goss's wilt — so an accurate diagnosis is important.

Conditions Favoring Disease Development
The NCLB fungus survives through the winter on infected corn residue at the soil surface. As temperatures rise in the spring and early summer, the fungus produces spores on residue, and then the spores are splashed or wind-blown onto leaves of the new corn crop.

Infection occurs during periods of moderate (64° to 81°F), wet, and humid weather. The fungus requires six to 18 hours of water on the leaf surface to cause infection. Therefore, symptoms are commonly observed following long periods of heavy dew and overcast days, and in bottomlands or fields adjacent to woods where humidity will be higher and dew will persist longer into the morning. In Indiana, symptoms are frequently observed late in the growing season, when days become cooler.

In years when summers are cooler and wetter than normal, the disease can develop earlier. Under favorable conditions, lesions can form seven to 12 days after infection. Each lesion can produce many spores, which are splashed or wind-blown to upper leaves or to other plants. Due to the length of the infection process, symptoms may not be noticeable for one or two weeks after infection occurs, depending on weather conditions and hybrid susceptibility. Hot, dry weather restricts disease development and spread.

Disease Impact
NCLB can reduce yield when conditions are favorable for early development of the disease. Lesions reduce the leaf area of the plant that carries out photosynthesis. The more lesions on a plant and the earlier in the season the lesions develop, the greater the loss of photosynthetic area.

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If lesions have reached the ear leaf or higher during the two weeks before and after tasseling, yield loss could occur. Hybrid corn yield could be reduced as much as 30 percent if lesions are present prior to or at tasseling. Yield losses in popcorn, sweet corn, or other specialty corn production systems may be greater.

If lesions do not appear on upper leaves until late in the season, yield losses will be less. Unfortunately, there is not a clear relationship between the amount of leaf tissue covered by lesions and the amount of yield loss, so it is not possible to say that a given severity of disease will result in a given loss of yield for any hybrid.

In addition to the potential for yield loss caused by a loss of photosynthetic area, NCLB lesions can contribute to stalk rot development and lodging.

Managing the Disease

Preventative management strategies can reduce economic losses from NCLB. No-till or reduced-till fields planted to susceptible hybrids are at high risk for NCLB development, but weather will be the primary factor for disease development. Preventative management is especially important for fields at high risk for disease development. In-season disease management options, such as fungicides, are also available.

When developing an NCLB management plant, consider the following factors.

Select Resistant Hybrids

Choose a hybrid with moderate resistance to NCLB. Although sporulating lesions will develop on hybrids with moderate resistance, the progress of disease is delayed sufficiently to protect against yield loss.

Hybrids will show different degrees of moderate resistance. Some seed companies indicate the degree of resistance with a numerical rating scale, but pay close attention to these scales — individual companies use different values to indicate the level of resistance. In areas where NCLB is a chronic problem, producers should seek out hybrids with race-specific resistance genes (known as *Ht* genes).

Manage Residue

Production practices that encourage residue to decompose will reduce the amount of fungus present to infect the next corn crop. Continuous corn and no-till or reduced tillage systems are at high risk for disease development due to the amount of residue left on the soil surface.

A one-year rotation away from corn, followed by tillage is recommended to prevent disease development in the subsequent corn crop. In no-till or reduced till fields with a history of NCLB, a two-year rotation out of corn may be needed to reduce the amount of disease in the following corn crop.

Use Fungicides Effectively

Fungicides are available for in-season management of NCLB. However, it is important to remember that fungicide applications are an additional cost to corn production, and economic factors (including corn market prices, fungicide application costs, and disease factors), must be considered when deciding whether or not to apply a fungicide for NCLB management.

Currently, there are no thresholds specifically for NCLB management to aid in fungicide decisions; however, it is important to prevent yield loss by protecting the ear leaf and the leaves above it as the plant enters the reproductive stages.

Scout fields around V14 (or just prior to tassel emergence) to help determine the level of disease pressure in a field. When scouting and weather forecasts indicate that the potential for disease development is high, fungicides that are applied at the tasseling to early silking stages (VT-R1) have the greatest likelihood of economic return. Before deciding to apply fungicides, consider cropping practices, predicted weather conditions, and economic factors.

Reference to products in this publication is not intended to be an endorsement to the exclusion of others that may be similar. Persons using such products assume responsibility for their use in accordance with current directions of the manufacturer.

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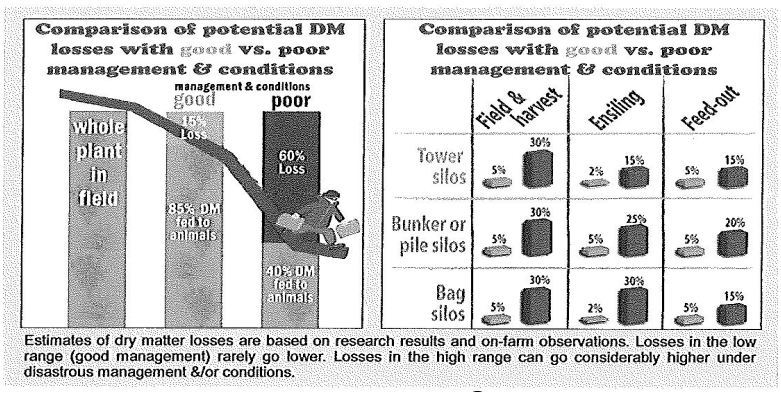
Good management: The most effective way to reduce dry matter and energy losses in ensiled forages

We don't always see forage losses, but they can accumulate in a hurry. From the field to the cow's mouth, as much as 60 percent of forage dry matter can be lost on farms. However, with good forage management, this loss can be reduced to as little as 15 percent. The loss in dry matter does not occur equally across the board; the easily available carbohydrates, such as energy-rich sugars, disappear in greater proportions than the fiber or protein. Therefore, when dry matter losses are great, you not only have less forage to feed, but the silage that remains is of poorer quality.

Inoculants are a tool to reduce dry matter losses, typically by 2-3 percentage units. So they have a role in reducing losses. However, they have their biggest effect on losses when used together with good silage management practices.



Estimates of dry matter losses are based on research results and on-farm observations. Losses in the low range (good management) rarely go lower. Losses in the high range can go considerably higher under disastrous management &/or conditions.

Silage inoculants: What the research tells us about when and how to use them

Fact Sheet – U.S. Dairy Forage Research Center

With all of the variables – crop varieties, weather, packing density, speed of covering – no two silage crops are ever the same, which is why scientists are reluctant to give blanket statements regarding when and how to use silage inoculants. A more favorable and scientifi c response is, "It depends."

Through the years, research has answered some questions about the effect of silage inoculants under various management and conditions. What follows is an overview of this research and some general recommendations. But first, a review on how silage inoculants work and the different types of inoculants.

In a nutshell, silage inoculants work by shifting silage fermentation in a direction that better preserves the crop. That happens when the lactic acid bacteria in the inoculant overwhelm the natural lactic acid bacteria on the crop. However, even the best inoculants are not always successful just as the best racehorse may not always win.

Two types: homofermenters and heterofermenters

There are now two main types of silage inoculants: the traditional homofermentative types, such as *Lactobacillus plantarum*, the *Pediococcus* species, and *Enterococcus faecium*; and the more recently used heterofermentative bacteria, *Lactobacillus buchneri*. A third type, combining homofermenters with *L. buchneri*, is beginning to be marketed.

Homofermenters get their name because they turn 6- carbon sugar molecules into one product – lactic acid. Heterofermenters produce multiple products. For example, they may turn one 6-carbon sugar into one lactic acid + one acetic acid + carbon dioxide (CO_2); or turn one 6-carbon sugar into one lactic acid + one ethanol + CO_2; or turn one lactic acid into one acetic acid + CO_2.

These different end products of fermentation can be compared as follows:

- lactic acid – strong acid, weak spoilage inhibitor, fermented by bacteria in the rumen;
- acetic acid – weak acid, good spoilage inhibitor, not fermented in the rumen;
- ethanol – neutral, poor spoilage inhibitor, partially fermented in the rumen;
- CO_2 (carbon dioxide) – lost dry matter.

So the type of inoculant that should be used depends partially on the goal. If you want to preserve crop quality as close as possible to that of the crop at ensiling, use an inoculant that maximizes lactic acid production, a homofermenter. If you want silage that doesn't heat, use an inoculant that produces acetic acid, which is the heterofermenter, *L. buchneri*.

Studies with homofermenters

A review of published studies by Muck and Kung back in 1997 resulted in data that are still useful today in showing the effects of adding homofermentative inoculants to silage. Regarding pH, it was lowered on average, but not all of the time; and it lowered the pH more often in hay crops versus whole grain silages.

The percentage of trials in which the pH dropped was: alfalfa silage, 58 percent; grass silage, 63 percent; corn silage, 43 percent; and small grain silage, 31 percent. In terms of dry matter recovery, it was improved in 38 percent of the trials. In the trials that showed an improvement in dry matter recovery, it improved by an average of 6 percent. When all trials were averaged, the improvement in dry matter recovery was 2-3 percent.

Regarding animal improvement, 27 percent of trials showed an improvement in feed intake; 52 percent showed an improvement in weight gain; and 46 percent showed an improvement in milk production. In the trials that showed improvement, the increases in feed intake, weight gain, and milk production were typically in the range of 3 to 5 percent.

Finally, when bunk life/aerobic stability were measured, there was an improvement in about 28 percent of the trials and a reduction in 31 percent of the trials; changes were generally positive in hay crop silages and negative in corn and small grain silages. In most cases, the effects, whether positive or negative, were small.

Studies with L. buchneri

Unfortunately in warm weather, bunk life is often an issue with corn and small grain silages. Because of the failure of homofermentative inoculants to increase aerobic stability in these silages, scientists began to look for inoculant species that could help keep silages from heating when exposed to air. One recent solution has been the heterofermentative species *L. buchner*i, which produces acetic acid both from sugar and lactic acid. Laboratory studies with *L. buchneri* have shown that it fairly consistently raises acetic acid concentration and results in a silage with a slightly higher pH. Because acetic acid inhibits yeasts and molds, the *L. buchneri*-treated silages have been more aerobically stable than untreated silage.

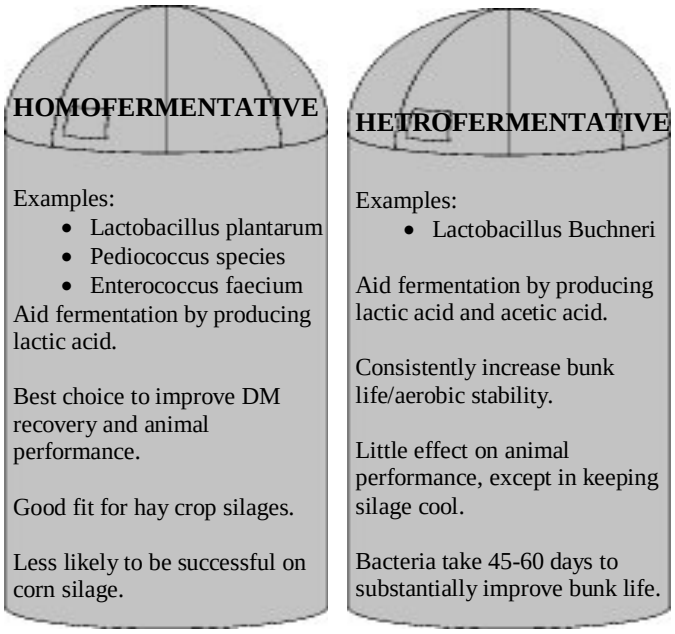
In terms of dry matter losses, silages treated with *L. buchneri* have been intermediate between untreated silage and silage treated with homofermentative inoculants. This is not surprising because CO_2 gas is made and lost while producing acetic acid. Typically there is a 1-2 percent improvement in dry matter recovery over untreated silage. In lactation trials with *L. buchneri*-treated silage, bunk life/aerobic stability increased consistently. Acetic acid also

(Continued on page 10)

(Continued from page 9)

increased consistently – greater than 5 percent dry matter in several cases. However, there has been no effect on dry matter intake by the cows; and there has been little or no effect on milk production in most cases.

Two Types of Silage Inoculants



Studies combining homofermenters and L. buchneri

When combining the two types of silage inoculants, ideally we'd expect to get the best of both worlds – good fermentation, except for elevated acetic acid; the dry matter recovery and animal performance of a standard inoculant; and the bunk life/aerobic stability of *L. buchneri*. What's the reality? Really, it's too soon to make a conclusion based on published research. Several small-scale studies have been published. In these, it appears that combinations behaved more like the *L. buchneri* treatment than the homofermentative bacteria treatment in terms of aerobic stability, fermentation products, and pH. Right now we are waiting for enough animal trials to be reported to know what the cows have to say.

Harvest conditions when inoculants appear to be most useful

While some forage producers use inoculants nearly all of the time – an insurance policy, others strive to use it when they suspect it will be most useful – an educated guess. In the studies outlined earlier in this article, inoculants were used no matter what the harvest condition, so results could be lower than if a forage producer used the 'educated guess' approach of when to use inoculants.

Research points to the following conditions when positive outcomes are more likely to occur when homofermentative inoculants are used:

• In hay crop silage – wilting times of 1 day or less; longer wilting times only if cool and dry.

• In corn silage – harvested on the dry side; immediately after a killing frost.

The *L. buchneri* inoculants (heterofermentative) appear to work more consistently across a wide range of conditions. However, there is much less published research on these inoculants from which we can draw strong conclusions.

Wet or dry inoculants?

People often ask if wet inoculants or dry inoculants work better than the other. There appears to be no research that has specifically studied this issue. However, there is some anecdotal and common sense advice.

First and foremost, these products work only if the bacteria are alive when they're put on the crop! Consequently, store them properly – generally in a cool and dry place. This is easier with inoculants applied wet because the packages are small and can be kept in a refrigerator until you need them. With the wet products, don't use chlorinated water to dilute inoculants unless the chlorine level is less than 1 ppm or unless the inoculant contains chemicals to take care of the chlorine. Chlorine can't discriminate between the bad bacteria it is meant to kill and the good lactic acid bacteria in your inoculant.

Also remember that these bacteria cannot move around on their own; they depend on the forage producer to spread them uniformly across the crop.

This is often easier with the wet products that can be sprayed onto the crop at the chopper. However, there has been some recent concern from research in Delaware that dark colored tanks may get hot enough in the summer sun to reduce the numbers of live bacteria in the inoculant. So you should choose a wet or dry product based on how well you can keep the product alive both before and while applying, and how well you can get it mixed with the crop.

Summary

Standard homofermentative inoculants are the best route to improve DM recovery and animal performance. They're a good fi t for hay crop silages. They are less likely to be successful on corn silage where it's harder to get consistent improvements, and there may be bunk life issues when they do work.

If a forage producer is adding inoculants because of bunk life/aerobic stability problems, he/she should first ask if the problem is due to a management issue that can be solved without an additive – such as getting a higher silage density or sealing the silo better or feeding out at a faster rate. If not, *L. buchneri* looks like a good alternative to propionic acid or anhydrous ammonia. It's safer to handle, is cost competitive, and has similar effects on dry matter recovery and animal performance. *L. buchneri* is effective 80 to 90 percent of the time on corn silage. However, the bacterium is a slow grower that takes 45 to 60 days of storage time before having much effect. Consequently, it's not an answer to heating problems with immature silage. *(Continued on page 8)*

NYAAC & ADADC TO CONDUCT "HOW TO HOST A FARM TOUR" WORKSHOP IN SEPTEMBER

The New York Animal Agriculture Coalition (NYAAC) and the American Dairy Association & Dairy Council (ADADC) will be conducting a training workshop September 24th to help owners of dairy, livestock, maple or u-pick farms learn how to host a successful farm tour. The four-hour long seminar will cover all aspects of farm tours from setting the date to messaging and parking cars. The workshop costs $25/farm (includes 2 registrations), includes lunch and handouts, and is scheduled for September 24th in Binghamton. Reservations are required.

Wednesday, September 24, 2013 – 10am-2pm
CCE Broome County, 840 Upper Front St, Binghamton

"Farm tours are one of the most effective ways to educate the public and positively influence their opinion about farming," said Jessica Ziehm, Executive Director of NYAAC. "These workshops will give participants the knowledge, resources and confidence to go home and organize an event for the public on their farm."

Whether hosting a kindergarten class for an hour or organizing a larger tour that is open to the general public, this workshop will go over all details needed, as well as ideas and suggestions to ensure a positive experience for both host farms and tour participants. In the morning, ADADC and NYAAC will present a comprehensive to-do list of organizing, promoting and conducting a farm tour.

After lunch, a panel of farm tour veterans will share their experiences with a variety of different types and sized farm tours. Those experts will be available for questions and answers following their presentations. Reservations are required by Monday, September 23rd, 2013. You can register online at: https://reg.cce.cornell.edu/hostfarmtour_203.

NYAAC is a farmer founded and funded organization that strives to enhance the public's understanding of and appreciation for animal agriculture and modern farm practices, of which ADADC is a member. ADADC is the region's dairy promotion organization that is funded by dairy farmer check off dollars and works to increase demand for domestically produced dairy products.

Making Quality Maple Confections & Value-Added Products workshop

CCE Broome County
840 Upper Front St, Binghamton
9am-3pm
Saturday October 12th

The workshop is designed to enhance producers' skills and provide demonstrations on making many related confection products taught by Stephen Childs, NYS Maple Specialist. Each participating maple farm will receive a NY Maple Confections Notebook or if you already have the notebook a digital thermometer. All materials, breaks, and lunch are included in program fee. Each farm will need to bring one quart of syrup (any color or grade) for testing for invert sugar and to be used in the program.

Topics to be covered:

- Maple suckers and hard candy Maple coating nuts
- Maple soft drinks Maple straws
- Maple slushies & smoothies Maple cotton
- Maple marshmallow Maple jelly
- Inverted maple syrup in confections

The cost is $65 per farm and includes either a NY Maple Confections Notebook or digital thermometer, lunch, snacks and all materials. To register and pay online visit: https://reg.cce.cornell.edu/mapleconfections_203 or contact Carol at (607) 584-9966.

FARM EXIT WORKSHOP

Thursday, Sept. 26
Farm Credit East Office
1 Technology Place, Homer
1-3 pm

Featuring:
Dan Galusha, Consultant, Farm Credit

Considerations for Selling the Farm will be discussed.

Pre-register with Sharon at (607) 753-5078 or shv7@cornell.edu.

For more information contact Janice Degni at (607) 753-5215 or jgd3@cornell.edu.

Cornell University
Cooperative Extension
South Central New York Dairy & Field Crops Team

South Central New York Area Dairy & Field Crops Team

60 Central Avenue
Cortland, NY 13045
Phone: (607) 753-5077
http://scnydfc.cce.cornell.edu

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The Cornell Cooperative Extension educational system enables people to improve their lives and communities through partnerships that put experience and research-based knowledge to work.

CALENDAR OF EVENTS

SEPT 18 & 19 FORAGE SORGHUM – Show & Tell 5 pm – 7:30 pm ***Details on page 6.***

"The Power of On-Farm Sustainable Energy" Series:

Region: Central NY, Onondaga County, Address: Larry Doody & Sons LLC, 1626 Barker Street, Tully 13159
SEPT 20 MILKING ENERGY FROM THE WIND 10am-noon.
This 900 acre dairy farm in Onondaga County is utilizing an Endurance E-3120 Wind Turbine to produce power for their farm. Owners Ed, Kevin and Rich Doody, milk 330 head of Holstein cows twice a day. Since their wind turbine was installed in September of 2012, they have produced over 136,000 kW of power. Their 140 foot tower supports 30 foot blades, rotating at a speed of only 41-42 rounds per minute. The wind turbine is powering all farm buildings, as well as the farm house. The installers of the system, Cazenovia Equipment Company (CEC Energy), will join us for the event. If you have an interest in the power of wind, this field day is for you!

Region: Central NY, Cortland County, Address: Ken and Deb Brock Songwood Meadows, 7375 Song Lake Road, Tully, NY 13159
SEPT 27 MAKING FARM FIBERS WITH ENERGY FROM THE SUN 2pm-4pm
Tour their small farm and the recently installed PV solar system. Ken and Deb raise Angora Goats and Katahdin sheep on their 39 acre farm. Deb uses the fiber from the Angora goats to produce mohair based products, including yarns, roving, various styles of socks and fleeces. In April 2012 a PV solar system installation was completed on the Brock farm. The project was the result of an enlightening energy audit of the operation, combined with educational workshops and the Brocks' personal commitment to renewable energy. This 8.925 Kw PV Solar array was installed to provide cost effective energy to the barn, but also supplies the home and other aspects of the farm business. It can produce over 9,500 Kwh per year, which equates to about $1,500 per year in electricity. Their investment in a new barn for the roof mounted solar array also solved their animal housing and equipment storage needs. The Brock's credit the unique abilities of their contractor for the success of their project. If you are interested in sustainable energy for small farms, this tour is for you!

Region: Finger Lakes, Tompkins County, Address: Dedrick Farms, 389 Buck Rd off of Rt. 34, Lansing, NY 14882
OCT 4 USING RESIDUAL BIOMASS TO FUEL THE FARM 10am - noon.
Demonstration of converting non-saleable farm residues from his 400 acre field crop and vegetable farm into fuel for heating and transportation. His major crops are sunflowers, corn, and soybeans, but also smaller amounts of wheat, oats, barley, rye, and alfalfa. He grows vegetables and has a vegetable stand as well. Matt uses both a small pelletizer and an oil press. After he separates and cleans his grains, he feeds inferior quality remnants directly into his boiler while pelletizing the stalks and stems. He uses this fuel to heat the house and provide domestic hot water year round. The next step is to hook up radiant floor heat that he has already installed in the barn. Matt makes use of broken kernel sunflower seeds too oily for pellets by feeding them into an oil press and blending with filtered waste motor oil and diesel fuel to run his tractors. Matt has been developing these methods over the last 4 years and uses both inventiveness and creativity to make use of what he has on the farm. If you are interested in biomass-based energy, this field day is for you!

Region: Central NY, Schoharie County, Address: Schoharie Valley Farms, 5605 New York 30, Schoharie, NY 12157
OCT 11 SOURCING SOLAR TO POWER ON-FARM RETAIL
More info on Schoharie Valley Farms at http://www.schoharievalleyfarms.com/.

All of these workshops are free and open to the public! Refreshments will be provided. To pre-register email Ryan Maher, ryan.maher@cornell.edu.