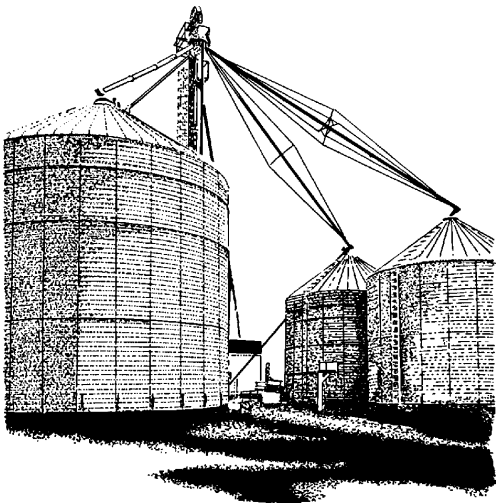


# PLANT & PEST ADVISORY

FIELD CROPS/LIVESTOCK EDITION \$1.50

AUGUST 19, 1999



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## Nitrate and Lethal Silo Gases

*Michael Westendorf, Ph.D., Animal Sciences*

### Silo Gases

Whenever silage is made from high nitrate forage, toxic gases (oxides of nitrogen) are produced in the first few days following fermentation. These gases are pungent, they may smell like laundry bleach, and are yellowish or reddish-brown in color. They may leave a yellow stain on wood or other surfaces. These gases can be lethal at levels too low for you to see them. Forages containing high levels of nitrates are especially prone to this problem.

Gases may occur at any time during silo filling. Although gases may occur up to 10 days after the last silage is put in the silo, the danger is greatest between 12 to 72 hours after first filling. The gases are heavier than air and will accumulate above the silage in the silo, in the chute, and in the silo room, and will flow out the silo juice drain. They may also pose a risk in adjacent feed rooms and even move into the barn, loading areas or milk houses. Throat irritation may be the first indication you have been exposed to low levels.

The risk is greatest for someone entering the silo alone. The silo blower should be run for 15 to 20 minutes before entering a partly filled silo and the blower should continue to run when anyone is inside. Never enter the silo unless there is at least one person available to help remove you in case of a problem. Stay out of the silo for at least a week or preferably two after the silo is filled. Keep silo room and adjacent feed and barn rooms well ventilated by keeping doors and windows open for at least two weeks after filling. Remember that the presence of high nitrate forage will result in a greater risk of silo gas formation.

### High Nitrate Forage

Both green chopping and feeding and baling drought stressed corn are to be avoided. I have received questions about both of these practices and they almost certainly will cause health problems or even death in animals receiving the forage. It may seem like a good deal to bale your neighbors drought stressed sweet corn for hay, but don't do it. Ensiling, however, as mentioned in previous newsletters will reduce nitrate levels by up to 60%. Then, working with nitrate-testing results it is possible to incorporate this silage in the diet to minimize risk to animals.

*SEE NITRATE ON PAGE 2*

# Building Soil Quality to Reduce Drought Stress

Joseph R. Heckman, Ph.D., Soil Fertility

The amount of drought stress exhibited by crops is not entirely due to lack of rainfall. The degree of wilting or leaf rolling expressed over a field during a drought is often a reflection of differences in soil type and soil quality. Symptoms of drought stress are partly related to soil properties that influence the ability of soils to absorb rainfall, store water, and deliver it to the growing crop. Soils that are sandy or shallow are inherently drought prone whereas deep loamy soils are better able to sustain crops through a drought. Soil physical properties such as texture cannot be easily changed, but soil quality can nearly always be improved with good soil management. Soil quality (sometimes referred to as soil health) is the capacity of a soil to function as medium for plant growth.

Attention to the soil management practices listed below can lead to enhanced soil quality and enable crops to better withstand drought.

1. Adopting cultural practices that build and maintain soil organic matter content are key to building soil quality. Things you can do to increase soil organic matter content:

- Grow sod crops in rotation with grain crops
- Grow cover crops. Refer to Rutgers Cooperative Extension Fact Sheet FS 849 "Cover Crops and Green Manure Crops, Benefits, Selection and Use."
- Add organic matter to soil in the form of livestock manures, municipal shade tree leaves, and compost.
- Control erosion. Soil erosion must be controlled to keep top soil rich in organic matter in place. Leave crop residues on the soil surface to control erosion.

2. Soil fertility impacts plant water relations.

Things you can do:

- Maintain soil pH in the desired range for the crops being grown. Allowing soil acidity to develop to the point where root growth is inhibited limits the volume of soil that can be explored for moisture. A regular soil testing and liming program helps to ensure that roots will be able to explore the entire soil profile for available water.
- Potassium nutrition is closely linked to plant water relations. Optimum levels of potassium supplied in the soil improve crop tolerance to drought stress.

3. Soil compaction destroys good soil structure and restricts root growth. Things you can do to avoid or correct problems related to soil compaction:

- Avoid driving farm equipment over wet soils. On dairy farms, running a manure spreader over wet soil often is a cause of soil compaction. Keep manure in storage until soil conditions are favorable.
- Avoid tillage operations when soils are too wet.
- Examine soil profiles for hard layers that are restricting root growth. Perform deep tillage with a subsoiler to break up a hard pan. The soil must be sufficiently dry for the subsoiling operation to cause shattering of the compacted layer.
- Leave crop residues on the soil surface to encourage earthworm activity. Earthworm channels improve rainwater infiltration and root development.

Droughts occur for varied durations during most growing seasons. Through good soil management practices, growers can help sustain crop growth during periods of low rainfall. □

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## NITRATE FROM PAGE 1

Remember that following heavy rains, nitrate accumulation in plants will increase. This may influence harvesting and require waiting several days for nitrate to be utilized by the plant and levels to subside.

Recently, the state Department of Agriculture made available a nitrate quick test for determining relative levels of nitrate. This should not be relied upon for quantitative results, but will give relative levels of risk. I have tried the test, it is fairly simple, and may help in assessing whether nitrate levels are low enough to begin harvesting. Contact your local county extension agent for more information. □

## Drought Briefs

*Bruce Barbour, Chair, Agriculture and Resource Management Agents Department, Rutgers Cooperative Extension*

### RCE Drought Web Site

The Rutgers Cooperative Extension web site has a special drought section with Extension publications covering agricultural issues. There are also links to other key drought web sites, including NOAA's meteorological information. The site address is: [www.rce.rutgers.edu/programs/drought99/index/htm](http://www.rce.rutgers.edu/programs/drought99/index/htm).

### Hot Line

As of August 16, 1999, the New Jersey Department of Agriculture (NJDA) initiated a special drought-related "Farmer Information Hotline". The hotline will operate Mon-Fri., 7 am- 8pm for the duration of the drought. The toll free number is 1-877-788-7785.

### Free Nitrate Testing

NJDA is offering FREE nitrate and mycotoxin testing for corn. High levels of nitrates accumulate in corn after tasseling and prior to grain formation. The nitrate is toxic to livestock and drought conditions tend to increase the nitrate levels further. The nitrate testing will be done by an out-of-state lab with one-week turnaround time. The mycotoxin testing is for grain and will be done in-house at the NJDA.

County Extension Offices are the drop off points for the samples. NJDA personnel will collect the samples from the county offices and see to processing. Contact NJDA at 609-984-2225 or your County Extension Office.

### NJDA Provides Diphenylamine Solution for Extension Offices

NJDA is providing County Agents with diphenylamine solution for field testing for nitrates. The testing will indicate the presence of nitrates, but does not specify levels. Contact your County Extension Office.

### Corn Yield Loss Statement from FSA

Jerry Hlubik of FSA announced that FSA has determined they do not need proof of yield loss if corn is to be harvested for silage. The stubble in the field is good enough proof that corn was grown. If the corn was insured the insurance agent still needs to be notified. If it was not insured the grower is eligible for the loan program but not the NAP program. As always, if there are questions contact the local office of FSA. □

## \$20 Million Grant to Assist Farmworkers

*Excerpted from USDA Press Release, Washington, Aug. 3, 1999*

Agriculture Secretary Dan Glickman announced that USDA will provide \$20 million in grants to provide emergency services to low-income migrant and seasonal farmworkers. Grants will be made available in areas experiencing a local emergency or a state or national disaster declaration.

"USDA has a long history of responding to farm owners who have seen their crops and farmland suffer from natural disasters and local emergencies," said Glickman. "With this funding, USDA now will be able to bring relief to the many migrant and seasonal farmworkers who have lost their sole source of income because there are few or no crops left to harvest."

Grants will be given to tax-exempt public agencies or private organizations that have experience in providing emergency services to low-income migrant and seasonal farmworkers. The type of service could include payment assistance for: rent or mortgage, utility bills, child care, transportation, school supplies, food, construction of new farmworker housing units, repair or rehabilitation of farmworker housing and construction of facilities related to farmworker housing, such as health clinics or child care facilities.

"Farmworkers and their families are some of the poorest people in our nation, and they are among those hardest hit by the depressed farm economy," said Jill Long Thompson, under secretary for USDA Rural Development. "It is sad to see that the American workers who ensure food is available to all of America are finding it difficult to feed or house their own families."

USDA will accept proposals for grant assistance from interested state and local non-profit community development organizations. Procedures for submission were published in the Aug. 2 Federal Register. Proposals must be sent to the Cooperative State Research, Education, and Extension Service by 5 p.m., Aug. 15, 1999.

USDA Rural Development provides loans and grants to finance affordable rental housing for farm workers and are the only national source for farm labor housing construction funds. Rural Development also provides funding to finance essential community services, such as childcare centers and health care facilities.

For more information about Rural Development programs, contact your local USDA Rural Development office or USDA Service Center, call the Rural Development national office at 202-720-4323, or check the web page at: [www.rurdev.usda.gov](http://www.rurdev.usda.gov). □

## What's all the Fuss about Phosphorous?

*Brian Aldrich, Ag. Outreach Specialist, North Jersey RC&D*

We're hearing more and more about soil phosphorous and concerns over its potential to pollute the environment. Several neighboring states have passed nutrient management laws. The U.S. Environmental Protection Agency is taking a closer look at agriculture and "nonpoint source pollution" as part of the Clean Water Act. (Nonpoint source pollution is pollution that cannot be traced to a precise point of origin, such as a drainpipe or a smokestack.) How did we get into this situation?

In 1914, when the Cooperative Extension Service was created by the Smith-Lever Act, many soils tested low in phosphorous. Educational programs were conducted to encourage producers to use phosphorous fertilizer. The agents did their job well. Our grandfathers and our fathers heard the message, and they did their jobs well, too. Slowly but steadily, the use of phosphorous fertilizers increased. The levels of phosphorous stored in the soil began to increase, too.

Today we are the beneficiaries of their success, producing high yields on very fertile soils. The problem is that we are starting to suffer from too much of a good thing. Mother Nature doesn't stand still. One of the first rules of ecology is, "For every action there is a reaction". (This is also known as, "You can't do just one thing!") When phosphorous finds its way into surface waters, it causes a population explosion among the microbes. The microbes consume all the oxygen, which kills the fish. Folks downstream making a living shellfishing find themselves out of a job.

Another trend has contributed to the build-up of phosphorous in soil. Herd sizes have increased as livestock operations have become more concentrated. This increases the amount of manure being applied on fields close to the barn, the coop and the sty. The amount of phosphorous in the manure is greater than the amount of phosphorous removed by crops. As a result, the level of phosphorous left in the soil goes up.

For years, we were taught that phosphorous is the nutrient that moves the least in soil. In fact, soil can tie up or "fix" phosphorous. That's why band applications of phosphorous have been recommended for years, to place the fertilizer where the seedling can get it before the soil ties it up. It was believed that phosphorous would only get into surface waters when sediment containing it was carried off the fields. Soil conservation practices such as stripcropping, diversions, and reduced tillage worked to keep phosphorous out of surface waters by keeping sediment on the

## South Jersey Field Crops Progress Report

*Phillip Tocco, Salem County Program Associate*

### Alfalfa

The last bit of rains seemed to have been enough to bring many stands out of their slow growth. Within the last week, many stands have grown two or more inches. Leafhoppers continue to be a big problem in every major geographical area we scout. The rains have knocked down the populations in some fields, but this has not been seen as a general rule. In addition, since the rains, hopper burn has been lessened in fields over threshold.

### Corn

Chopping is continuing throughout our scouting area. Localized rains and differences in soil types are causing dramatic differences in stalk nitrate levels as well as moisture contents between nearby fields. In some cases, stalk nitrates have been low enough to chop fields to 12 inches. In other cases, an 18-inch cutter bar height has been recommended. Because of this, it is strongly urged that each grower take advantage of the free nitrate testing to maximize yield returns with a minimum of nitrate contamination to feed.

### Soybeans

Mites are infesting many fields within the scouting area. The dry, dusty conditions have promoted large outbreaks. The rains have come at a really critical time as most plants are entering pod fill. □

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land. If soil erosion were controlled, the phosphorous would be, too.

Unfortunately, the old rules have started to break down on those farms where the amount of phosphorous stored in the soil has increased to very high levels. Researchers are finding soils so saturated with phosphorous that they are starting to *release* phosphorous instead of store it. These soils have reached their limit on the amount of phosphorous they can store. The surplus phosphorous is dissolving into a form that can be leached out into both ground and surface waters. Sediment controls are no longer adequate to keep this surplus phosphorous on the farm.

So that's how we got into this situation of high phosphorous on some of our farms. In my next article, I will talk more about what you can do to control the build-up of phosphorous on your farm. □

# Federal EQIP and State Conservation Cost Share Programs

*Source: USDA Press Release, August 12, 1999, Somerset, NJ*

New Jersey producers can sign up for cost-sharing assistance through October 15, 1999 for funding in Fiscal Year 2000 under USDA's Environmental Quality Incentives Program (EQIP) and the New Jersey Conservation Cost Share Program (CCSP). EQIP and CCSP are authorized to address agriculture's priority natural resource and environmental concerns.

Under these voluntary programs, USDA and the New Jersey Department of Agriculture provide cost-share assistance to family-sized farms for 50 to 90 percent of the costs of implementing conservation systems which also provide environmental protection and enhancement. Approved practices include grassed waterways, filter strips, manure storage facilities, pesticide containment facilities, and capping abandoned wells. Producers may also receive incentive payments for applying such land management practices associated with nutrient, manure, irrigation water, wildlife, and integrated pest management. EQIP, administered by the USDA Natural Resources Conservation Service and Farm Service Agency, also provides farmers with technical and educational assistance.

EQIP and CCSP applications will be evaluated for funding approval based on environmental benefits and other factors. Proposals in New Jersey's priority areas will receive the majority of the USDA funding. The remaining cost-sharing funds will be allocated throughout the state. Priority areas are chosen because of their environmental sensitivity and significant natural resource concerns, such as manure management, soil erosion control, and water quality.

Wayne Maresch, Natural Resources Conservation Service State Conservationist explains, "The Environmental Quality Incentive Program offers New Jersey's agricultural producers many financial incentives to improve water quality, conserve soil, and reduce water use. New Jersey's priority areas and the conservation practices for EQIP and the State program were determined locally by farmers, soil conservation districts, area residents, local government officials, environmental groups and other interested parties."

Samuel R. Race, Executive Secretary of the State Soil Conservation Committee, which is providing the state funding, emphasizes, "The committee is pleased to provide a major increase of cost-share assistance

for farmers in New Jersey. Our farmers are strong advocates of conservation, and now by combining EQIP with CCSP, more producers can invest in conservation practices which will help them maintain productive lands while also improving water quality."

Gerard Hlubik, USDA Farm Service Agency Programs Chief, points out, "Interest among farmers in participating in cost-share programs to improve water quality, save water, and reduce soil erosion has been increasing. The Farm Service Agency works closely with producers to determine their eligibility for these conservation programs."

Producers may sign-up for EQIP and CCSP at any USDA Service Center or soil conservation district. Producers can also work with NRCS to develop their own conservation plans without cost sharing. □

# New Liberalized Farmer Deer Permit Regulations

*John Grande, Director, Rutgers Snyder Research Farm*

The New Jersey Legislature recently passed into law liberalized regulations pertaining to "Farmer Deer Permits". Below is a Division of Fish, Game & Wildlife (DFGW) comparison chart that addresses the major differences between the old vs. new permit system. A farmer must select which type of permit best suits his needs. Farmers experiencing excessive crop damage should carefully review the advantages of this new farm permit system. Farmers

who qualify for the "non-occupant" permit may hunt in the *entire* zone for which they qualify. Check with the Division of Fish, Game & Wildlife for details (609-292-9173, Permit Section). Also, we have been informed that farmers who received "Farmer Permits" last year will be mailed applications this year. Additionally, we understand the DFGW personnel will speak on the subject at County Ag Board meetings.

## Special Note: Geese

It was also announced that during the September goose hunting season, the limit is 5 per day. Hunters will not be required to purchase the special \$2.00 permit, but must call 1-800-WETLANDS to receive a "HIP" number. State and Federal Waterfowl Stamps are still required.

## Comparison Between "Occupant" and "Non-Occupant" Farmer Deer Permit Application Requirements

### "OCCUPANT"

Permit will be valid for the farm property where applicant resides.

Must live on farm property.

Must have at least 5 acres of land that is tax-assessed as farmland.

Must be the owner or leasee and his immediate family members, who also live on the farm, can qualify.

Each family member (see above) may apply for a bow, shotgun and muzzleloader permit.

If farm property is located in multiple zones, the applicant must choose one zone to apply for the free farmer deer permit.

A hunting license or rifle permit is *not* required if hunting on the farm where applicant lives. If hunting on the other lands, a valid hunting license, and a rifle permit if hunting during muzzleloader season, is required.

Farmer may also apply for regular deer permits through the mail-in lottery.

### "NON-OCCUPANT"

Permit will be valid for the entire zone listed on application.

Is not required to live on farm property.

Must actively till at least 30 acres of land that is tax-assessed as farmland. Woodlots cannot be used to qualify.

If applying for leased land, a copy of agricultural and hunting rights leases must be attached to application.

The farmer or farmers and their immediate family members (up to a total of 5 people) may qualify.

Each of the 5 people (see above) may apply for a bow, shotgun and muzzleloader permit.

If farm property is located in multiple zones, the applicant must choose one zone to apply for the free farmer deer permit.

A valid hunting license, and a rifle permit if hunting during the muzzleloader season, is required. A hunting license or rifle permit is not required if hunting on the farm where applicant lives.

Farmers may also apply for regular deer permits through the mail-in lottery.

## Deer Fencing Remains Available

Deer fencing remains available from the joint distribution of the New Jersey Department of Agriculture/Division of Fish Game and Wildlife deer fence program.

This program will provide up to 30 rolls of fence, 165 feet in length, to New Jersey farmers who generate in excess of \$10,000 of income from production agriculture and own the land on which the fence is to be erected.

Despite the recent drought which has adversely affected many New Jersey farmers, farmers are encouraged to participate in this program to mitigate the damage they have incurred, and may continue to incur, as a result of deer feeding on their crops.

The fence offered is six foot high, woven wire, high tensile fence with two additional strands of wire to be provided making for an eight foot high fence. Posts and labor are not provided.

If you are interested in receiving an application, please contact the Division of Fish, Game and Wildlife at (609) 292-6685 or the NJDA, Division of Rural Resources at (609) 292-5802. □

## Weekly Weather Summary

*Keith Arnesen, Ph.D., Agricultural Meteorologist*

Temperatures averaged much above normal. Extremes were 96 degrees at several locations on the 13th and 45 degrees at Charlotteburg on the 10th. Weekly rainfall averaged 1.87 inches north, 2.51 inches central, and 2.00 inches south. The heaviest 24 hour total was 4.10 inches at Trenton on the 13th to the 14th. Estimated soil moisture, in percent of field capacity, this past week averaged 73 percent north, 69 percent central and 48 percent south. Four inch soil temperatures averaged 73 degrees north, 75 degrees central and 75 degrees south.

Weather Summary for the Week Ending 8 am Monday 8/16/99										
WEATHER STATIONS	R A I N F A L L			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	1.52	13.25	-8.81	92	51	73.	2	2228	320	85
CANOE BROOK	1.94	14.18	-9.00	96	52	77	6	2522	609	87
CHARLOTTEBURG	2.40	15.85	-7.55	92	45	71	3	1900	395	97
FLEMINGTON	1.70	11.63	-10.75	96	51	76.	4	2322	360	86
LONG VALLEY	1.78	13.14	-10.97	89	51	73	4	2009	312	87
LONG BRANCH	2.11	15.53	-6.37	84	59	73	0	2252	238	88
NEW BRUNSWICK	1.90	14.92	-6.97	94	54	77	4	2448	271	91
PEMBERTON	2.87	16.15	-6.00	96	51	77.	4	2525	389	93
TOMS RIVER	1.41	8.47	-14.00	89	53	75.	3	2248	246	88
TRENTON	4.27	17.70	-3.15	94	52	75.	1	2255	-23	93
CAPE MAY COURT HOUSE	.82	11.17	-8.22	86	59	77.	2	2409	256	44
DOWNSTOWN	1.82	17.17	-3.33	92	54	76.	3	2437	151	89
HAMMONTON	2.77	16.24	-5.26	92	54	76.	2	2435	171	93
POMONA	2.33	16.09	-3.58	89	55	76.	3	2397	285	94
SEABROOK	.94	17.03	-2.66	91	61	77.	3	2588	292	60
ATLANTIC CITY MARINA	3.33	14.14	-4.71	85	65	76.	3	2429	397	100
WOODSTOWN	1.54	16.97	-4.43	95	56	78	NA	2590	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW										
Last Week 249 (Ending 8/9/99)										
This Week 257 (Ending 8/16/99)										

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