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In this issue

Growin' good corn: Rocket science or common sense?	1-6
Crop Reports	6-7
Agriculture Weather Report	7
Announcement	7-8
Upcoming Events	8-9
Did You Know	9

Growin' good corn: Rocket science or common sense?

Dr. Bob Nielsen, Extension Corn Specialist, Perdue University

Background

For 70 years, beginning in 1866, national corn grain yields in the U.S. were essentially flat (Fig. 1) and averaged only 26 bpa (bushels per acre) during that entire 70-year time period. The absence of noticeable yield improvement throughout all those years is remarkable given that farmers of the day were essentially also plant breeders practicing a recognized form of plant breeding (mass selection) as they saved the best ears from each year's crop for planting the next.



As the nation began to emerge from the Great Depression and Dust Bowl years of the 1930's, U.S. corn growers began to replace their traditional open-pollinated corn varieties with the new technology of double-cross hybrid seed corn. Within a few years, a significant shift in national corn grain yield was evident. During the period 1937 – 1955, average corn yields changed from no annual yield improvement to an annual rate of gain equal to roughly three quarters of a bu per ac per year (Fig. 1). Such a shift in the rate of improvement in corn grain yield represented a quantum leap shift in productive capacity.

A second quantum leap in the annual rate of yield gain in corn occurred in the mid-1950's with the greater adoption of single-cross hybrids and other new improved production technologies including mechanization, herbicides, and inorganic fertilizers (especially nitrogen). Beginning around 1956, the rate of annual yield gain dramatically changed from about three quarters of a bu per ac per year to nearly 2 bu per ac per year and has remained at that rate in the succeeding 55 years (Fig. 1).

The exponential population growth on this planet mandates that we increase the rate of yield improvement in corn and other major food crops around the world. If the average annual rate of yield improvement remains constant at just under 2 bu per ac per year, then achieving a national average corn yield of 300 bpa would not be expected to occur until about 2086; a far cry from the often quoted promise that biotechnology will result in a national U.S. corn grain yield average of 300 bpa by the year 2030.

To reach that lofty goal by 2030, another quantum leap shift in the rate of annual yield gain would have to occur beginning NEXT YEAR that would take us to an annual increase of about 7.5 bu/ac/yr for the next 19 years. Such a quantum leap shift in yield improvement would be unprecedented in the history of corn production. Contrary to the hype and hoopla over transgenic corn traits by the farm press and seed corn industry in recent years, there is little evidence that a third quantum leap shift in corn productivity has yet begun (Fig. 1).

Cont. pg. 2

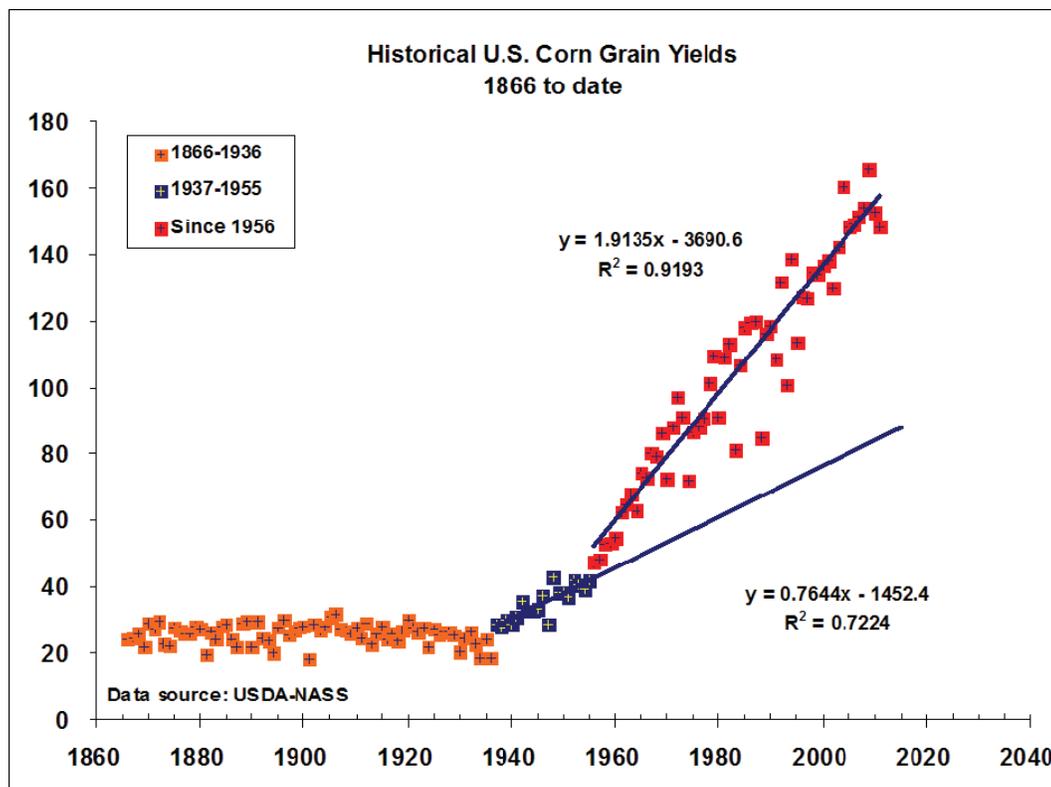


Figure 1. National average corn grain yield since 1866. Data source: USDA-NASS (2011).

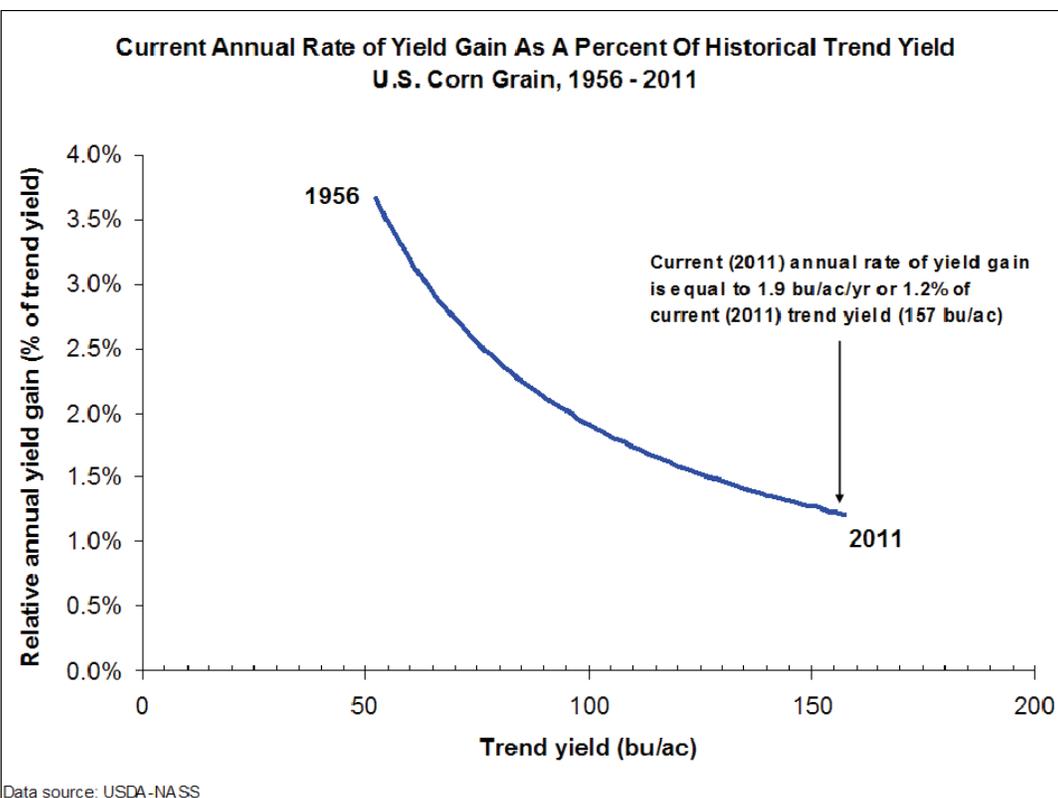


Figure 2. Fig. 2. Relative annual rate of yield gain for U.S. corn since 1956 based on current annual rate of 1.9 bu/ac/yr. Data source: USDA-NASS (2011).

Another disconcerting fact is that relative to trend yields, the annual relative rate of yield gain has been steadily decreasing for the past 50+ years (Fig. 2). Shortly after the second quantum leap shift occurred in the mid-1950's, the relative rate of yield improvement was about 3.5% per year. Since then the absolute rate of yield gain per year has remained unchanged at 2 bu per ac per year. However, since today's average grain yield is significantly higher than those in the 1950's, the relative rate of annual yield gain today is only about 1.2% per year.

300 Bushels per acre is achievable today!

Even though the goal of achieving a national AVERAGE corn yield of 300 bpa by 2030 is likely out of reach unless a miraculous improvement in technology occurs soon, it is true that individual growers have demonstrated in national corn yield contests that they can produce 300 bpa with today's technologies and genetics (NCGA, 2010).

Furthermore, the physiological yield components necessary to produce a 300+ bu crop are not terribly out of reach today. Potential ear size is easily 1000 kernels with today's hybrids. That would be equal to an ear with 18 kernel rows and 56 kernels per row. If (admittedly a big IF) that ear size could be maintained at a

harvest population of only 30,000 plants per acre and IF kernel weight could be maintained at about 85,000 kernels per 56 lb. bushel (a modest kernel weight), those yield components would multiply to equal a yield potential of 356 bpa!

The secret to producing 300+ bushel corn

Given that the yield potential of that bag of seed corn is already 300+ bpa, then what is preventing all of us from routinely producing those high yields on our farms? The answer to that question is simple..... Once that seed is planted, that crop is subjected to a season-long array of yield influencing factors, most of which are stresses that reduce yield potential.

So, the secret to improving yields on your farm is simply to sharpen your focus on identifying the yield-influencing factors specific to the fields you farm. Once you have successfully done that, then you are better equipped to identify the appropriate agronomic management strategies to alleviate those factors holding back your yield and, perhaps, enhance those factors that promote high yields.

Pretty simple, eh?

Rocket science or common sense?

The trouble with the way many folks go about the business of improving yields on their farms is that they always look for the "silver bullets" or the "one-size-fits-all" answer to their problems.

They read farm magazine articles that highlight what one guy has done in Timbuktu that supposedly resulted a 20 bpa jump in his corn yields and figure that they ought to try the same thing on their farm in southwest Indiana. They listen to the testimonials of someone in the next county over that used Bob's High Yield Snake Oil & Emolument on his crop and rush over to their local crop input retailer to buy some of the stuff to try on their farm. They take notes on the best management strategies presented at a crops conference by some guy from Purdue University who has never been on their farm and make plans to adopt those BMPs for next year's crop.

The problem or challenge, you see, is that you need to invest your own time and effort to identify the important yield-limiting factors that are specific to your own fields. As I stated earlier, once you have successfully identified the yield-limiting factors specific to your production fields, then you are better equipped to identify the appropriate agronomic management strategies to alleviate those factors holding back your yield and, perhaps, enhance those factors that promote high yields.

It ain't rocket science. It is hard work and common sense, coupled with a sound knowledge of agronomic principles.

Yield influencing factors (YIFs)

The process of identifying the YIFs that are important to your specific fields is not an easy one. First of all, these YIFs can be either negative or positive in their effects on yield. Pay attention to both.

These YIFs may occur every year in a given field..... or they may not.

These YIFs often interact with other YIFs to influence yield. Think about the compounded effects of heat + drought + soil compaction.

These YIFs often affect different crops differently. For example, most of us do not worry about gray leaf spot disease in soybeans. Frankly, as a corn guy, I don't worry about soybeans anyway, but that's another story.

These YIFs often interact with soil type / texture / drainage conditions.

These YIFs almost always interact with weather conditions.

Ultimately, the effects of YIFs on corn yield are equal to their effects on the four components that constitute grain yield. The timing of the occurrence of YIFs relative to crop growth stage greatly determines their effect on these yield components because they develop at different times throughout the season (Fig. 1).

- Plants per acre (population or "stand")
- Ears per plant (degree of barrenness)
- Kernels per ear (potential vs. actual)
 - ◊ Kernel rows per ear
 - ◊ Kernels per row
- Weight per kernel

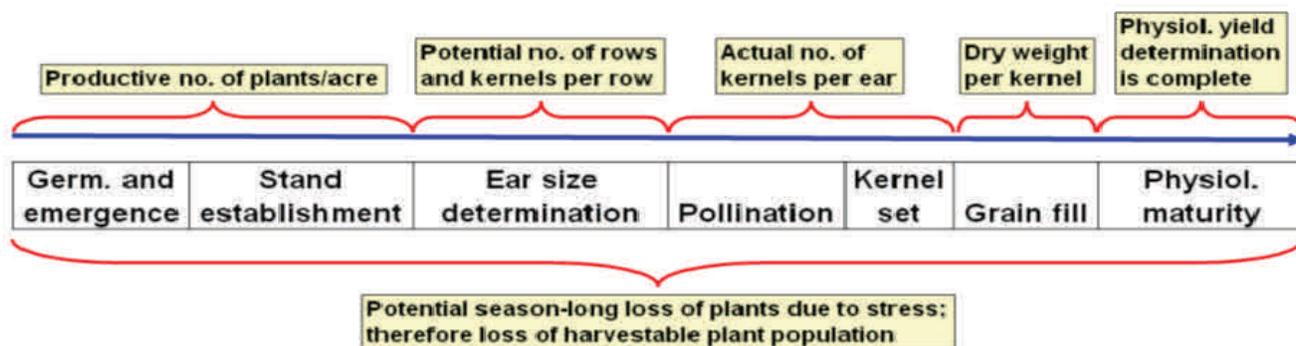


Fig. 3. Phenological timeline of the development of yield components in corn.

Once you sit down to list the possible YIFs that may influence corn yields on your farm, you will easily reach the conclusion that there must be a gazillion YIFs to consider. Where do you begin?

If you have farmed a particular field for a while, your own experience in that field is invaluable to identifying the YIFs specific to that field. You can probably come up with a short list of obvious YIFs based on that alone.

In future cropping seasons, strive to keep thorough notes on what happens with the crop during the entire growing season. Don't just plant it and come back at harvest. Visit your fields regularly. Sure, you can hire a crop scout to walk your fields for you, but there is a lot to be said for you walking your fields yourself.

Take advantage of the agronomic skills and knowledge of both the private and public sectors. Work closely with the sales or technical agronomists from your crop input retailers. Consider hiring the services of an independent crop consultant.

Don't forget the Extension resources available at your own land-grant university. You say you don't know the name of your state's Extension corn or soybean agronomist? Shame on you! You can find them in the following Web directories. These specialists can also put you in contact with other, more specific, content matter specialists at your land-grant university.

<http://www.kingcorn.org/experts/CornSpec.html>

<http://www.kingcorn.org/experts/soyspec.html>

Stay up to date during the growing season by reading Extension newsletters from around the Midwest. You can find most of them linked at my Chat 'n Chew Café Web site: <http://www.kingcorn.org/cafe>.

Yes, I know this is shameless promotion of my own Web activity, but what can I say?

Spend time perusing two good university Web sites that focus on corn production issues.

Mine at Purdue: <http://www.kingcorn.org/news/archive.html>

Roger Elmore's at Iowa State Univ: <http://www.agronext.iastate.edu/corn>

Did your wife buy you a Smartphone or tablet for your birthday with 3G cellular connectivity? Install a GIS app on it and use the thing to map problem areas in the field for future reference. I have used an app called GISRoam with my Apple iPad to map problem areas or field features with reasonably good success. There's another app called iGIS that I have not used enough to comment on, but it's worth checking out. If you use your iPhone, I would recommend considering an after-market phone case that contains an additional battery to provide you with more hours of GIS field scouting.

Take advantage of previous year's yield maps to physically direct you to specific spots in a field to continue your hunt for YIFs. Target those field areas for specific soil sampling. Target those areas to intentionally scout the following crop season.

Do you have access to aerial imagery during the growing season? Recognize that aerial imagery by itself often cannot identify the cause of visual differences in a field. That is usually your job using the imagery to guide you to spots in the field.

The bottom line with this discussion is..... Get out into your fields during the growing season, identify problem areas early while the evidence is still there to aid diagnostics, and figure out what's going on with your crops!

Key factors to consider

Even though I hinted earlier in this treatise that you should not blindly believe any "expert" who has never been on your farm, here are a few key factors I can offer to you for your consideration as you go about the business of identifying the important YIFs for your farm.

Field drainage

Throughout Indiana, naturally poorly-drained soils constitute a major perennial challenge to establishing vigorous stands of corn by virtue of their effects on the success and uniformity of rooting and plant development. The adequacy of field drainage (tile or surface) greatly influences whether corn will produce 200-plus yields or nothing (ponded out) or somewhere in between.

By improving tile or surface drainage in a field, you can reduce the risks of ponding or soggy soils, loss of soil nitrate by denitrification, and soil compaction by tillage and other field equipment. Reducing these risks enables more successful root development and stand establishment of the corn crop, which in turn will enable the crop to better tolerate stresses later in the growing season.

Supplemental water

Some soils in the eastern Corn Belt suffer from the opposite problem of drying out too easily when rainfall is inadequate. Obviously, fields with those soils will usually respond to supplemental water provided by above-ground irrigation (center pivots, shotguns, rows) or below-ground supplementation by virtue of pumping water back into tile drains or drainage ditches. Either choice requires informed decision-making relative to irrigation scheduling based on crop demand and soil water availability (Joern & Hess, 2010). Maintenance and proper operation of center pivot irrigation systems is crucial to optimize efficiency in terms of irrigation costs and crop benefit.

Hybrid selection

Most of us spend too little time evaluating the documented performance of potential hybrids for use in our operations. Look at any hybrid trial that includes “good” hybrids from a range of seed companies and you will easily see a 50 to 100 bushel range in yield between the top and bottom of the trial. Mind you, this spread from high to low occurs in variety trials where supposedly every hybrid entered into the trial is a “good” hybrid. I doubt that seed companies enter “bad” hybrids on purpose.

The key challenge is to identify hybrids that not only have good yield potential, but that also tolerate a wide range of growing conditions (Nielsen, 2010). The best way to accomplish this is to evaluate hybrid performance across a lot of locations. University trials are good for this exercise (Iowa State Univ, 2011; Devillez, 2011). If you use seed company trials, be aware that often there are few competitor hybrids included in variety trial results.

Recognize that no hybrid wins every trial in which it is entered. Look for hybrids that consistently yield no less than about 90% of the highest yield in the trial no matter where they are grown. For example, if the top hybrid in a particular trial yielded 230 bpa, then look for hybrids in the same trial that yield at least 207 bpa (230 x 0.90). That may not sound like much of a challenge, but you will be surprised how few hybrids will meet that goal when evaluated over a lot of locations.

Once you’ve identified some promising hybrids based on their consistency of performance, then concentrate on other important traits like resistance to important diseases in your area of the state.

Manage trash in no-till If you no-till corn on soils that are poorly drained, then you simply must strive to manage surface “trash” to enable drying / warming of

surface soils, facilitate effective planter operation, and improve crop emergence / stand establishment. Aim to burn-down winter annual weeds or cover crops before their growth becomes unmanageable. Use row-cleaners on the planter units to remove a narrow band of “trash” from the seed furrow area. Avoid planting “on the wet side” to minimize the risk of furrow sidewall compaction or topside compaction.

Avoid soil compaction

If you improve soil drainage, you will also minimize the risk of working or planting fields “on the wet side” and, therefore, the risk of creating soil compaction with tillage or other field operations that can limit root development. Minimize the number of tillage trips, consider strip-till or no-till systems. Remember, though, that no-till or strip-till is not immune to the risk of soil compaction.

Continuous corn or not?

Frankly, continuous corn simply does not yield as well as rotation corn. Numerous long-term rotation trials have documented this across a number of states. The yield drag is especially likely for no-till corn after corn. Folks who claim to do well with continuous corn are often fairly aggressive with their management of the stover from the previous crop.

Corn stover delays the drying / warming of the soil and thus delays crop emergence and development. Corn stover (including old root balls) often interferes with planter operation, causing poor / uneven seed depth or seed-2-soil contact and thus causes delayed or uneven crop emergence. Decomposing corn stover immobilizes soil nitrogen early in the season and can retard corn growth and development early in the season until root development reaches a critical mass. Corn stover can intercept soil-applied herbicide and reduce the effectiveness of weed control. Finally, corn stover harbors

inoculum of important diseases like gray leaf spot or Goss’ wilt.

Any way you look at it, a continuous corn cropping system is fraught with challenges.

Starter fertilizer or not?

Starter fertilizer, especially nitrogen, is important for maximizing corn yields in the eastern Corn Belt. I offer the following explanation and leave it to you to decide whether your situation is similar.

A little background: Young corn plants depend heavily on stored kernel reserves until roughly the V3 stage of development (three leaves with visible leaf collars). At that point, the plants begin to “wean” themselves from dependence on the stored kernel reserves (which are playing out) to dependence on the developing nodal root system. If life up to that point has been hunky-dory, the transition to dependence on the nodal roots will go smoothly and the crop will continue to develop into a vigorous and uniform stand that will tolerate future stresses nicely.

However, if conditions have been challenging during emergence and early stand establishment, then nodal root development has probably been stunted and the young plants will struggle to “wean” themselves from the kernel reserves. Consequently, the plants will appear to “stall out”, their development will become uneven, they will turn light green to yellow, and the resulting stand will not be as vigorous and uniform as you want. Such a stand of corn will likely continue to struggle the remainder of the season. It is the latter situation wherein a robust 2x2 starter fertilizer program will aid the young plants as they struggle in the transition to dependence on nodal roots. Our experience in the eastern Corn Belt suggests that starter nitrogen is the primary important nutrient and starter N rates should be no less than 20 to 30 lbs actual N per acre; perhaps higher than that for no-till continuous corn.

Nitrogen management

Nitrogen management in the eastern Corn Belt is challenging because of our poorly drained soils, ample rainfall, and the risk of N loss by either denitrification or leaching. Consequently, yields are often lower than desired because of inadequate levels of soil N during the growing season, resulting in lower grain income for the grower.

Alternatively, growers sometimes apply more N than the crop requires in an effort to mitigate the consequences of excessive N loss on the crop and, thus, incur higher crop production expenses.

Best management practices that target the efficient use of nitrogen fertilizers in corn are well documented (Camberato et al., 2011; Sawyer, 2011) and include avoiding fall N applications, avoiding surface application of urea-based fertilizers without incorporation, and adopting sidedress N application programs where practical. These practices, plus the implementation of a robust starter fertilizer program, will help reduce the loss of soil N and maximize the bushels produced per pound of N fertilizer applied.

Disease management

Warm, humid conditions typical of the eastern Corn Belt during the summer months are conducive for the development of several important foliar fungal corn diseases, including gray leaf spot and northern corn leaf blight. Goss's Wilt, a potentially severe bacterial disease, has "migrated" into Indiana in recent years and represents a potential new challenge for growers in the eastern Corn Belt. Yield losses from these foliar corn diseases can easily decrease corn grain yields by 20% or more.

Best management practices that target efficient management of these important corn diseases are well documented (Wise; 2010a, 2010b, 2011) and include:

- Hybrid selection for good disease resistance characteristics.
- Avoiding continuous corn cropping systems.
- Avoiding no-till cropping systems.
- Responsible use of foliar fungicides (except for Goss's Wilt)

Remember, it ain't rocket science!

It should be obvious at this point that achieving higher, more consistent yields does not require "rocket science". Rather, we're talking about a lot of common sense agronomic principles that work together to minimize the usual crop stresses that occur every year and allow the crop to better tolerate uncontrollable weather stresses. Other agronomic practices not discussed in this presentation include a sound weed control program that focuses on the use of residual herbicides and an attitude that you will aim to kill weeds when they are small.

Make the effort to identify those yield limiting factors that are most important for your specific farming operation. This requires good crop detective skills and a sound understanding of agronomic principles. Together with your crop advisor (s), work toward identifying and implementing good agronomic management practices that target those yield limiting factors.

References used in this article can be available upon request.



Crop Reports

Western

Washington County welcomed 2 plus inches of needed rain. Barley is in head and wheat will not be far behind. Rye and other cereals have been chopped for silage and to make way for corn planting. The recent cool temperatures have slowed planting to a crawl. Some corn has been planted prior to the rains so we will see how that turns out. The early warm temperatures and the recent cold snaps have hit our peaches and cherries hard. Apples will be fine but probably will not require thinning. Gardeners are also not immune to planting based on the temperature and not by the calendar so cold nights make both farmers

and gardeners a little nervous. Hay and pasture grasses have slowed greatly after an early flush of growth. This needed moisture and warmer temperatures of May will move things along.

Central

The two week period covered by this report started with extremely dry conditions and ends with three days of perfect rainfall with some areas receiving over 2 inches. The week with dry weather had its impacts on planting. Corn planting has been moving along very well. Sweet corn producers had stopped planting due to a lack of rain.

Cool temperatures will slow germination but with the additional soil moisture this should not be a problem. Barley is in head, with wheat not far behind. Barley will have short straw, but the rain April 21-23 should help with wheat straw height. Peaches have been impacted by the cold, with a large percentage of loss. Forages have been in need of moisture and pastures had been declining with the lack of moisture and the cooler temperatures. Alfalfa hay cutting has started to deal with weevil. Only a small percentage of hay has been cut, but it is noticeably short.

Northeast

As in other parts of Maryland we are grateful for the rain over the weekend... it was much needed. Corn planting has progressed well. Small grain plantings look good with no disease issues to report at this time. Some early hay was made before the rain of the past week; otherwise grasses are starting to head and making that first cutting is dependent on getting a good weather window.

Southern

Most areas received between 1 ½ and 2 inches of much needed rain over the last week. Early planted corn has emerged well. Farmers are continuing to plant corn, with good progress being reported. The barley crop is headed and the wheat crop is now mostly headed. Wheat and barley responded well to the rains and looks fairly good. Straw length is short but head formation looks good. Pest damage has

been limited. Not many reports of slug or cutworm damage. Farmers are preparing to switch to soybean planting. Tobacco planting should start next week.

Upper Eastern Shore

The 2 inches of rain on the 22nd was a welcome sight as corn planting had stopped because of lack of moisture. Some farmers were irrigating for enough moisture to get corn planted and irrigating again to get the herbicide incorporated. There is still seed corn maggot activity along with minimal slug, wireworm, and cutworm damage in early planted corn. Barley is 100% headed/pollinated and by the time this is delivered, most wheat will be the same. The entire region should have sufficient moisture for small grain, grain fill. Insect pressure in small grains remains low over all. 1st cuttings of alfalfa and grass hay have begun.

Lower Eastern Shore

Recent rains of April 22 brought an average of 2 inches of rain to the region. This rainfall, however, has not been enough to lift burn bans for the entire area. Corn plantings are behind schedule but should resume this week. At this time, wheat and barley rated good to excellent with little disease or insect problems reported. Pasture conditions are improving.

Timeline: This crop report is for the field observations from April 14 through April 26, 2012. Crop Report Regions: Western (Garrett, Allegany and Washington), Central (Carroll, Frederick, Howard, Montgomery), Northeast (Cecil, Harford, Baltimore), Southern (Anne Arundel, Prince George's, Calvert, Charles, St. Mary's), Upper Eastern Shore (Kent, Queen Anne's, Talbot, Caroline), Lower Eastern Shore (Dorchester, Wicomico, Worcester, Somerset)

Agriculture Weather Report

Adam Caskey, Meteorologist



A rare, late season nor'easter brought some much needed rain to Maryland and was just what we needed to put a dent in the drought and rainfall deficit. Rainfall accumulations were generally on the order of one to two inches from the storm with some of the highest amounts on the Eastern Shore, where it was needed the most. Signs point toward our weather pattern being fairly zonal and flat over the

next few weeks with just smaller scale disturbances causing sporadic rain chances as the pattern makes subtle shifts, especially from the last few days of April through the first week of May. This is more conducive to rainfall than the prevailing patterns of March through mid-April but shouldn't cause multiday, soaking rain events. With this type of pattern, it is unlikely that we will

experience any major swings in the temperature, so I'm expecting temperatures to be near normal for the first week of May with a better chance of warmer than normal temperatures by the second week. These warmer than normal temperatures increase the likelihood of below average rainfall, so irrigation is more likely to be needed during the second week of May.

Announcement**Maryland 4-H, Grains for Youth**

Donate Grain! Make a Difference!

By donating grain, farmers provide opportunities for youth across Maryland

and can save on self-employment tax, federal income tax, and state income tax.

How Do I Donate Grain?

1. Deliver the grain to one of the participating grain elevators.



- | | | |
|---|--|--|
| 2. Indicate how many bushels are for the Maryland 4-H program, making the Maryland 4-H Foundation the owner of those bushels. | Participating Grain Elevators
Hostetter Grain, Inc.
(www.hostettergrain.com) & Nagel Farm Service (www.nagelgrain.com) | Nagel Farm Service
Cordova
11761 Cordova Rd
Cordova, MD 21625 |
| 3. Sign donation form, approving the grain donation and amount donated. | Hostetter Grain
Mt. Pleasant
9819 Kelly Rd
Walkersville, MD
21793 | Nagel Farm Service
Harmony
6202 Nagel Rd
Preston, MD 21655 |
| 4. Grain will be sold at current days price and credited towards Maryland 4-H Foundation account. | Hostetter Grain
Oxford, PA
481 Limestone Rd. Oxford, PA 19363 | Nagel Farm Service
Preston
3695 Maple Ave
Preston, MD 21655 |
| 5. Farmer will receive tax deductible donation receipt from Maryland 4-H Foundation once payment has been received from grain elevator. | Nagel Farm Service
Wye Mills
14209 Old Wye Mills Rd
Wye Mills, MD
21679 | |
- For complete details:
www.mymaryland4hfoundation.com or call
301-314-7835

Upcoming Events

Producer's Digital Toolbox Seminars

This seminar will assist you in capitalizing on the hardware and digital tools now available through the internet. Three courses that are packaged into a 1 day seminar are to be offered at 4 locations. The seminar will cover the topics: Digital Databases, Fingertip Marketing for Portable Devices, Apps, and Social & Professional Applications.

Time: 8:30 AM - 1:30 PM

Cost: \$40.00 per person (includes lunch and course materials)

Dates & Locations:

May 10, 2012
Hagerstown Community College, Building:
Career Programs
Building, Room #: CPB142 11400
Robinwood Dr.,
Hagerstown, MD 21742
Registration Deadline: May 1, 2012

May 15, 2012
Cecil College - Elkton Station Campus

Building: Elkton Station,
Room #: 303 107 Railroad Avenue, Elton
MD 21921
Registration Deadline: May 6, 2012

Registration: You must pre-register! No walk-ins will be accepted. Register for the date and location by going to:
<http://agnradmin.umd.edu/training/description.cfm?ID=179>

You will need to mail your check, and make it payable to
"EAC" to:
University of Maryland Extension - Talbot Office
Producer's Digital Toolbox
28577 Mary's Court, Suite 1
Easton, Maryland 21601
For more information about this program please contact:
Shannon Dill, sdill@umd.edu

Beginning Farmer Workshop Series

Session: "Connecting the Dots"- Overview of sources for farm supplies, equipment and services for the farm community.

Overview of services offered by various agencies (Soil conservation programs, UME, Ag Land Preservation, Farm Service Agency Programs, Southern MD Ag Commission, Farm Credit, Farm Bureau, Local Farmers' Markets.

Date: May 3, 2012

Time: 5:00-8:30 p.m.

Location: St. Mary's Agriculture Services Center, 26737 Radio Station Way, Leonardtown MD

Contact: Benjamin Beale,
bbeale@umd.edu or 301-475-4484

2012 Strawberry Twilight Meeting, Wednesday May 9th

The 2012 Strawberry Twilight Meeting at the Wye Research and Education Center will be held Wednesday, May 9, 2012 from 6:00-8:00 PM, rain or shine, at UMD - Wye Research and Education Center, Farm Operations Complex, 211 Farm Lane, Queenstown, MD.

You'll hear: University of Maryland and USDA small fruit experts discuss the



current season's challenges and the impact that the new fruit pest may have on the industry.

You'll see: USDA Moveable High Tunnel plots with plasticulture strawberry

production; University of MD Strawberry High Tunnel plots with table top production demonstration and bio-fumigation trial; and Outdoor Plasticulture Fertility Trial plots with Chandler strawberries. For additional program

information, contact Mike Newell, mnewell@umd.edu, 410-827-7388. If you need special assistance to attend this program, please contact Debby Dant, ddant@umd.edu, 410-827-8056, no later than May 2, 2012.

SIGN-UP TO RECEIVE "AGRONOMY NEWS"

If you would like to receive this newsletter via email please contact Rhonda Barnhart at rbarnhar@umd.edu. The subject line should be: Subscribe Agronomy News 2012.

If you would like a hard copy please contact your local county extension office to sign-up for the mailing list. The list of local county offices can be found at www.extension.umd.edu.



Did You Know

Maryland now has more than 120 farmers markets.

This edition of Agronomy News is brought to you by:

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