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## Seeding Depth Considerations for Corn

*Dr. Bob Nielsen, Extension Corn Specialist, Perdue University*

Choice of seeding depth for corn is often paid scant attention by growers during the rush of planting their crop. Human nature being what it is, we tend to simply leave the planter's depth control setting at the same position as in previous years. Indeed, many agronomists agree that a seeding depth of 1.5 to 2 inches is an all-purpose range that works well in most situations. However, certain conditions merit consideration of changing seeding depth, the most common of which is soil moisture at seed depth.



Adequate soil moisture at seed depth (not too wet, not too dry) helps ensure rapid germination of the seed. Equally important is the spatial uniformity of adequate soil moisture at seed depth because that influences the uniformity of germination and subsequent emergence of the crop. The importance of the adequacy of soil moisture at seed depth is highlighted by the fact that imbibition of moisture by the newly planted seed occurs with the first 24 to 48 hours after planting.

However, "cooperation" of the weather includes the absence of any significant rainfall that would delay planting. Therein lies the challenge this year in choosing the proper seeding depth because soil moisture near the surface is already borderline adequate for seed germination in some fields. Planting corn at the usual 1.5 to 2 inch seeding depth may place seed into soil too dry for germination or (even worse) into soil that is unevenly moist that will result in uneven germination and emergence.

If rainfall remains a scarce commodity over the coming weeks, growers should assess soil moisture at seed depth in every field they plant. There will be situations where a 2-inch seeding depth does not provide uniformly adequate soil moisture. There will be situations where growers should place seed deeper to minimize the risks of uneven germination.

**Remember This:** Corn has the physiological capability of emerging from depths far greater than that which today's planters can place seed because of the innate ability of the seedling mesocotyl to elongate during the emergence process.

Soils in some fields are prone to developing dense surface crusts following intense rainfall events that can interfere with seedling emergence and result in seedlings leafing out underground. Growers naturally hesitate to plant too deeply in these soils because of this risk. My opinion is that the consequence of surface crusting is mostly influenced by the timing of the development of the crust relative to the timing of the emergence process and less so by the depth of seeding. In other words,

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a dense surface crust can impede penetration of the seedling coleoptile whether the seed was planted 1.5 inches deep or 3 inches deep if the crust develops shortly after planting.

Field to field variability for adequacy of seed depth soil moisture may be dramatic

this year. The risk/benefit of deep seed placement is influenced by the depth where adequate soil moisture is spatially uniform, soil temperature at seed depth, and the 6- to 10-day forecast for rainfall and temperature. A combination of 1) adequate soil temperature today, 2) inadequate or variable soil moisture at 2 inches, and 3)

little to no rainfall expected in the next week or two represents a planting situation that calls for choosing a seed depth deeper than 2 inches.

**Opinion:** How deep is too deep for planting corn? Probably deeper than what your planter can plant.

## Response of Full Season Soybean to Nitrogen Fertilizer

*Dr. Bob Kratochvil, Extension Agronomist*

Has your fertilizer dealer been suggesting to you that your soybean crop needs a little nitrogen fertilizer in order to maximize yield? Have you questioned the wisdom of this suggestion because you know that soybean is a legume that obtains from 50-75% of its nitrogen requirements from the air via its symbiotic relationship with *Bradyrhizobium japonicum*, a nitrogen-fixing bacteria? Additional nitrogen needed to maximize production is supplied from 1) soil residual nitrogen and 2) nitrogen supplied via mineralization of organic matter during the growing season. University of Maryland Extension currently recommends that no additional nitrogen fertilizer be supplied to soybean. But, this recommendation recently has been questioned by some Maryland fertilizer dealers who are suggesting to their customers that some starter N fertilizer (25-50 lb N/acre) is required for soybean to attain maximum yield. With funding support from the Maryland Soybean Board, a study to investigate the response of full season soybean to nitrogen fertilizer was conducted during 2011.

The study was conducted at four University of Maryland Research and Education Center (REC) farms: 1) Lower Eastern Shore REC – Poplar Hill; 2) Wye REC; 3) Central Maryland REC - Beltsville; and 4) Central Maryland REC - Upper Marlboro. Two Asgrow soybean varieties (3539RR2 and 4630RR2) were planted between the dates of 6 and 21 May in 30-inch rows, a

spacing that would accommodate in-season nitrogen applications. Nitrogen treatments were rates of 25 and 50 lb N/acre supplied as UAN that was directed to the ground by drop nozzles at time of application. Three application time treatments were tested: 1) at planting; 2) at R1 (appearance of first flower); and 3) at R3 (appearance of first pod). And, a treatment of no fertilizer nitrogen was used as the control. Root samples for the purpose of assessing soybean nodulation were collected between growth stages R1 and R2 from the control treatment and the two at planting nitrogen treatments at all locations except the Wye. The number of nodules on the roots of 5 plants/plot was counted.

Different numbers of nodules were observed at the three locations. Approximately eleven nodules per plant were present for the soybeans collected at Poplar Hill and Beltsville while the plants from Upper Marlboro averaged 42 nodules/plant. The two varieties did not differ for nodule number at Poplar Hill and Beltsville while at Upper Marlboro Asgrow 4630RR2 had nearly 48 nodules/plant compared to 36 for Asgrow 3539RR2. The primary reason for assessing nodules was to determine if the addition of nitrogen fertilizer to the system changed the soybean plant's ability to nodulate. At both Poplar Hill and Beltsville, the addition of either 25 or 50 lb N/acre had no influence on nodule formation. However, at Upper



Marlboro significantly more nodules (30%) were present for the two nitrogen fertilizer treatments compared to the control. Soybean yield differed across the locations; 34.5 bu/acre at Poplar Hill and Beltsville; 55 bu/acre at Upper Marlboro; and nearly 73 bu/acre at Wye. However, there was no significant nitrogen response observed at any of the locations. The nitrogen treatments averaged 49.4 bu/acre across the four locations and were neither different from each other nor different compared to the control (no nitrogen) which averaged 48.7 bu/acre. The only difference of note was between varieties with Asgrow 4630RR2 producing 4 and 9 bu/acre better than Asgrow 3539RR2 at Wye and Beltsville, respectively.

Seed protein, oil content and seed size were quality factors measured. And, nitrogen fertilizer application had no effect on any of these.

This study will be repeated at a number of Maryland locations during 2012.

However, at this time, I do not see a different result and thus see no reason to alter University of Maryland Extension's current recommendation that nitrogen fertilizer application to soybean is not

necessary to optimize yield. In order to ensure that your soybean will be able to manufacture an adequate supply of nitrogen, University of Maryland Extension does recommend that a seed

inoculant be used at planting whenever soybean has not been part of a field's crop rotation within the past 2-3 years.

## MD Grain Marketing Site Updated for 2012: Crop Budgets, Custom Rates and Fact Sheets

*Shannon Dill, Extension Educator, AGNR - Talbot  
(Collaborators: Jennifer Rhodes, Ben Beale, Jim Lewis, UME -Extension Educators)*

The University of Maryland Extension has updated [www.mdgrainmarketing.umd.edu](http://www.mdgrainmarketing.umd.edu) site with new input data for 2012 crop budgets. Also posted is the 2011 MD custom rate survey, sample lease agreements and eight grain marketing fact sheets.

### Crop Budgets

Cost of production is very important when making decisions related to your farm enterprise and grain marketing. Enterprise budgets provide valuable information regarding individual enterprises on the farm. This tool enables farm managers to make decisions

regarding enterprises and plan for the coming production year. An enterprise budget uses farm revenue, variable cost, fixed cost and net income to provide a clear picture of the financial health of each farm enterprise.

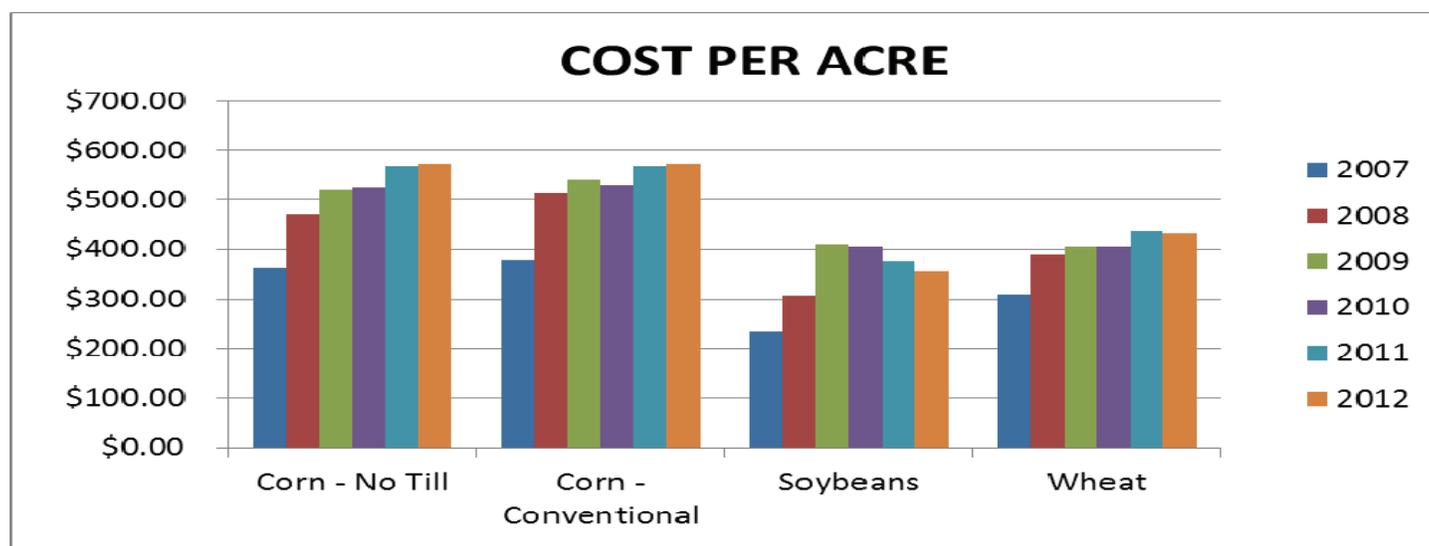
The 2012 Maryland enterprise budgets were developed using average yields and estimated input cost based upon producer and farm supplier data. The figures presented are averages and vary greatly from one farm to the other. It is therefore crucial to input actual farm data when completing enterprise budgets for your farm.

### How to Use University Enterprise Budgets:

The enterprise budgets can be used as a baseline for your operation. Make changes to these budgets to include your production techniques, inputs and overall management.

The budgets are available electronically in PDF or an Excel worksheet online at [www.mdgrainmarketing.umd.edu](http://www.mdgrainmarketing.umd.edu). Use this document to make changes for your operation and to find a lower cost of production. If you have problems downloading any of these budgets, contact information is located on the website.

| Cost Per Acre |                |                     |          |          |             |
|---------------|----------------|---------------------|----------|----------|-------------|
|               | Corn - No Till | Corn - Conventional | Soybeans | Wheat    | Wheat/Beans |
| 2012          | \$572.54       | \$573.21            | \$355.69 | \$433.19 | \$655.56    |



## Will you have a bumper season?

*Sudeep A. Mathew, Editor—Agronomy News*

We have started a new growing season weeks earlier than expected. This marks the third year that University of Maryland Extension is publishing Agronomy News. I am happy to report to you that this year we have a new addition, "Agriculture Weather Report" in our featured sections. This report will forecast major weather events like temperature, precipitation, soil moisture levels, fire, storm patterns, cold and freeze events that will have an impact on crop production. It is the contribution of Mr. Adam Caskey, Meteorologist with ABC-7, WJLA, Washington DC. Adam is the meteorologist for "Good Morning Washington" and is a Certified Broadcast Meteorologist (CBM), the most prestigious seal awarded to a broadcast meteorologist. Adam is a native of Minnesota and worked with a weather program that my alma mater, North Dakota State coordinated. On behalf of all the readers of Agronomy News, I welcome him to our world of agriculture.

The year 2012 is a farm bill year but whether we will have a farm bill or not is questionable. The reason is this year is also an election year; lawmakers tend to not take on any major bills during election years. The current U.S. farm bill that covers everything from food stamps to conservation programs will expire on September 30<sup>th</sup>. Either a new bill or an extension of the existing bill, need to be passed by August for continuation of farm bill supported programs. Either way, a major overhaul of farm policies that have existed for decades can be expected. This Tuesday, US Secretary of Agriculture Tom Vilsack, while delivering the 160<sup>th</sup> Landon Lecture series at Kansas State University, said agriculture is responsible for about 10 percent of U.S. exports, and that every billion dollars in agriculture sales generates

8,400 jobs. Last year with the help of high crop prices, the agriculture sector recorded \$136.3 billion in farm exports. This year is the time for action. Let our lawmakers know how important a strong farm and agriculture policy is for the continued growth of our county. According to the 10 year global agriculture forecast report by OECD/FAO, agricultural production is anticipated to grow more slowly during the next decade than it did in the past decade. However, in the absence of unexpected catastrophic events, the growth will be on track to meet the estimated long term requirements of a 70% increase in global food production by 2050.

I am posing a million dollar question when I ask whether we will have a bumper crop this year. The early spring has provided an opportunity for many of our growers to plant early. According to the latest report from USDA, seven percent of nation's corn crop has already been planted; normally it is two percent by this time. The recent freezing temperatures in the Midwest had a very slight impact on emerging corn that was early planted. Further planting may be delayed due to these freeze events.

On the marketing side, USDA reports that prospects remain favorable for a large year-to-year increase in winter wheat supply because planted area is up by 1.1 million acres and ratings of crop condition are substantially improved compared to the same time last spring. To counter this price negative news, there is the potential for higher levels of wheat to be used for livestock feeding later in the summer which could increase demand at that time. Global oilseed production is projected at 440 million tons, down 5.2 million from last month.



Brazil soybean production is estimated at 66 million tons, down 2.5 million tons from last month and the result of warm temperatures and lack of rainfall since late February in the southern areas of that country. This information will be used by US soybean producers as they plan production for 2012.

Last year, farm income surpassed 100 billion dollars for the first time. Farmers used those dollars to pay production expenses and make equipment and other farm operation investments which helped many of the US rural economies rebound. In early February, a forecast was made that farm income may drop to around 96 billion dollars this year due to the increasing farm operating expense. Although strong crop prices may likely favor farm profits, increasing operating costs and energy prices could hinder any gains in the margins. Since the season got off to an early start and with cooperative weather during the growing season, I believe there is the potential for a good year.



## Crop Reports

**Western**

To date, April 2012 has been cooler and drier than March in western MD. Grass, small grains and weeds are about three weeks ahead of normal. Rye is being harvested for silage and corn planting soon will be getting into high gear. Hay harvest won't be behind. Apples and peaches are in full bloom. Farmers are hoping for rain as soil conditions are drying out.

**Central**

Early warm temperatures, low rainfall and recent winds have contributed to very low topsoil moisture. First cutting hay yields are in jeopardy of being short as is small grain straw height. Reports from some pockets of Frederick County indicate threshold levels of aphids in small grains, especially oats. Corn planting is underway with up to 10% planted in Montgomery and Howard Counties and approaching 5% in Frederick and Carroll Counties. Recent cooler temperatures have impacted herbicide activity. Small grain silage harvest is in full swing. Pastures were in excellent condition through March and early April, but have now slowed due to lack of moisture. Fruits have been damaged by freeze and frost with the cherry crops nearing complete loss in the region.

**Northeast**

Spring is definitely here and that have encouraged a few to get an early start to corn planting. However, most field work is focused on field prep with fertilizer applications and burn-down sprays progressing well. Many growers are ready to start planting corn either the week of April 9 or 16. Soil moisture

conditions are moist to dry, with a lot of producers wanting a good shower of rain. Small grain overall looks good; with spring fertilizer and herbicide treatments mostly finished. Pastures are adequate for the season and hay crops are progressing well; some added moisture would be welcome to assure a good first cutting.

**Southern**

Everything is off to an early start this year. Dry conditions across the region are the norm. The wheat and barley crops have some variability across fields in the region with some great looking wheat and some not so great. Most uneven fields can be attributed to a lack of nitrogen and some micronutrient issues. It seems that we entered the spring growing season with very low residual N reserves in the soil, even on fields that received fall N or fields with a history of poultry litter. Corn planting has progressed well through this week. The dry weather is slowing progress, with some farmers waiting for some rain before resuming planting. Windy conditions this week and last have made herbicide applications challenging for farmers wanting to get early burn down for soybean. Products with a 30 day planting restriction need to be applied soon for full season beans. In terms of pests, alfalfa weevil has been very active over the last 5 weeks. We have experienced some issues with seed corn maggots in vegetable crops. Hay and pasture fields greened up early this year and look good.

**Upper Eastern Shore**

The entire region could use a little rain. While surface moisture is sufficient in

most fields for germination, it will not take too many more windy days without rain to cause germination problems. Barley is almost completely headed and early varieties of wheat are heading. There are still aphids in small grain fields and a few cereal leaf beetle larvae are starting to emerge. There is a little powdery mildew around, but the low humidity and dry conditions have helped reduce the spread. I keep telling myself that historically, our best wheat yields come in dry years with a cool, long grain fill period. Many alfalfa fields were sprayed for weevils and it looks like the 1<sup>st</sup> cutting will be 2 weeks early. Some farmers began planting field corn April 1<sup>st</sup>, which had sprouted as of the 9<sup>th</sup>, but had not emerged. I am surprised about the high number of slugs present in no-till fields with the dry weather.

**Lower Eastern Shore**

As of this writing, temperatures have cooled somewhat from the very warm temperatures of mid to late March. Some frost has been reported. Little to no rainfall and high winds have lead to very dry conditions with code red fire danger warnings and reports of brush fires throughout the region. Barley is headed with most wheat soon to follow. Barley and wheat crops are rated good to excellent at this time. Cover crop burn down, manure applications and associated field work are well underway with plantings of corn expected to be on time. Disease and insect pressure is light at this time.



## Agriculture Weather Report

*Adam Caskey, Meteorologist*



The entire state of Maryland continues to experience dry conditions with the Eastern Shore being the driest. All locations west of the Chesapeake Bay are in a D0 drought, which is considered "abnormally dry," and nearly the entire Eastern Shore is in a D1 drought, which is considered "moderate" according to the U.S. Drought Monitor. Some minor

rain chances exist in the coming weeks, but a big shift in our weather pattern to make up for the lack of moisture doesn't seem likely through late April. In turn, drought conditions should persist and even intensify. However, the weather pattern will change to greatly affect temperatures, and it looks as though temperatures will climb above average

for the remainder of April and into May with only a brief cooling trend possible around the last few days of April. The cold mornings with temperatures near and below freezing that have recently occurred in Western and Northern Maryland will be unlikely through the end of April.

## 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:**

April 20, 2012

Chesapeake College, Building:  
Economic Development Center,  
Room #: EDC-27 Routes 50 & 213,  
Wye Mills, MD 21679

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](mailto:sdill@umd.edu)

**Cover Crop Twilight Meeting on April 25, 2012**

This meeting will be held at UMD - Central MD Research and Education Center, 4240 Folly Quarter Road, Ellicott City, Maryland from 5:30 PM.-7:30 PM. Dr. Ray Weil and Natalie Lounsbury of the University of Maryland will give a tour of their experimental plots using forage radish, spring oats and other winterkilled cover crops for early spring vegetable planting without herbicides. This meeting will count for 2 hours of Nutrient Management Voucher credit. To register please call the University of Maryland Extension Carroll County Office at 410-386-2760 or send an e-mail to [chill1@umd.edu](mailto:chill1@umd.edu).

### 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](http://www.extension.umd.edu).



## Did You Know

Agriculture employs one out of every 12 Americans

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Sudeep Mathew, Editor

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