

The Grain Store

Winter 2008 Volume 14 Issue 2

A Joint Publication of the Maryland Grain Producers Association and the Maryland Grain Producers Utilization Board

Energy Bill Passes

The Energy Independence and Security Act of 2007 was passed with the help of both mainstream political parties and was signed by the President, setting forth legislation that will displace nearly all of the nation's \$1 billion dollar per day imported crude oil habit by 2030. New and developing ethanol and automotive technologies are the main pieces of this historic legislation.

The Act will expand the Renewable Fuels Standard to nine billion gallons in 2008 and progressively increase to a 36 billion gallon requirement by 2022. At least 21 billion gallons are to be "Advanced" biofuels, derived from renewable biomass other than cornstarch and achieves a 50% emission reduction, or "Cellulosic" bio-fuels, derived from any cellulose, hemicellulose, or lignin, that is derived

from renewable biomass and achieves a 60% emission reduction. Up to 15 billion gallons can be from conventional biofuel, such as corn-based ethanol.

The Act includes grant programs to assist the biofuel industries, including:

- \$200 million in 2008-2014 for the installation of refueling infrastructure for stations to offer E85.
- \$25 million for 2008-2010 for research, development and commercial application of biofuels production in states with low rates of ethanol and cellulosic ethanol production.
- \$500 million for 2008-2015 for the production of advanced biofuels that have at least an 80% reduction in life-cycle emissions.

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Debnam and Haines Awarded Scholarships

In its tenth year of awarding scholarships for the pursuit of a career in agriculture, the Maryland Grain Producers Utilization Board was proud to award a \$2,500 scholarship to Alan Debnam and Ryan Haines at the 2007 Commodity Classic.

Alan Debnam, son of Lee and Darlene Debnam, plans a future marketing new grain crop varieties, with particular interest in crops bred for the manufacturing of ethanol. Alan was raised on a corn and soybean farm in Kent County, and is majoring in agriculture economics at Virginia Technical Institute.

Ryan Haines was raised on a dairy farm with 360 acres of crop land in Carroll County. Son of Michael and Anita Haines, Ryan is majoring in Dairy Science with a minor in Agribusiness Management at Virginia Tech to pursue a career in dairy cattle nutrition and owner of a personalized dairy heifer rearing facility.



Donald Maring, MGPUB President, awards \$2,500 scholarships to Alan Debnam of Chestertown and Ryan Haines of Taneytown.

"Alan and Ryan are fine examples of the leaders we look to support for the future of our industry," stated Maring. For application information, visit marylandgrain.com and click on scholarships.

Stepping up to the Plate

Charles Schaefer, MGPA President

Much has been gained for the future of grain farmers on the national level with the passage of the Energy bill. The Farm bill will also bring new opportunities in managing risk and marketing our products. In Maryland, 2007 has seen an onslaught of negative press on agricultural issues from making little progress in nutrient management, to going after high profits at the cost of ruining our land, to selfishly promoting ethanol at the risk of doubling food prices and allowing children in Africa to starve. We are being attacked from all angles - the media, the environmental community, even a select few of academia. Their boasts are made from incorrect data or at best, selective, to support their objectives. Unfortunately, their messages have been heard by a majority who are demanding action.

The 2008 General Session may prove volatile as legislation is introduced to regulate more of our operations and implement programs that will further restrict our abilities to manage our farms.

This is the time for us to turn this situation into a positive step for agriculture. We can no longer just talk of the good old days, point to someone else, or take no action. We must tell our legislators our positive story of implementing best management practices that protect our land resources for the future. We must also step up to the plate and be willing to prove those actions. Documentation of our practices only confirms that what we do is the most responsible and science-proven methods to produce the most healthy and affordable food supply in the world. It is only if we are in the game that we can win it.

USDA 2007 Census of Agriculture is Here

The Census of Agriculture is the only comprehensive source of information available on agriculture. Report forms were mailed December 28th.

Who uses Census of Agriculture data?

Agricultural Extension Service personnel, crop and marketing consultants, farm organizations, commodity associations, USDA and other Federal, State, and County government officials, farm publication economists, agricultural researchers, financial and educational institutions, and agricultural businesses are just a few examples of users of Census of Agriculture data.

The theme of the 2007 Census is

**"Your Voice, Your Future,
Your Responsibility"**

Your Voice. As a grain producer, your voice will be heard by joining with other producers who understand the importance of the Census data and send back their completed report.

Your Future. By reporting on the Census, producers will convey to their community, county, state, and the nation, the value and importance of agriculture.

Your Responsibility. It is your responsibility to make sure your operation is included in the Census totals. This important information needs to be complete and accurate. Funding and many other decisions will be based on Census data.

Will my Census information be kept confidential?

Absolutely. Respondents are guaranteed by law (Title 7, U.S. Code) that their individual information will be kept confidential. The information can be used only for statistical purposes and published only in tabulated totals. The report cannot be used for purposes of taxation, investigation, or regulation. The privacy of individual Census records is also protected from disclosure through the Freedom of Information Act.

Must I respond to the Census?

Yes. United States law (Title 7, U.S. Code) requires all those who receive a Census report form to respond.

The Maryland Grain Producers Association encourages you to complete and submit your form.

Energy

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Other provisions include requiring the National Highway Traffic Safety Administration (NHTSA) to increase the average fleet Fuel Economy Standards for cars and light trucks to 35 miles per gallon by 2020, a standard which had not increased since 1975. For the first time, NHTSA will establish a standards program for medium- and heavy-duty trucks.

A new standard set for light bulbs will increase their efficiency by 30%, and effectively phase out most common types of incandescent light bulbs by 2012-2014.

Support for improvements in carbon capture from power plants and sequestration technologies will help address the challenge of global warming. Investment in technology to expand geothermal energy use is also included. New or renovated Federal buildings will go "green" and be required to reduce their fossil fuel generated consumption by 55% in 2010 and 100% by 2030.

Passage of the Energy Act is seen as a tremendous success for the agricultural community in securing support for biofuels and promoting a more self-sufficient and energy-efficient society.

Hotchkiss receives Miller Award

The Maryland Grain Producers Association (MGPA) awarded its prestigious Dr. James R. Miller award to journalist Bruce Hotchkiss at the Maryland Commodity Classic on July 26. Established in 1988, this award recognizes a professional, non-grower for his/her contributions to the grain industry. Mr. Hotchkiss is well known for his fair and unbiased reporting of issues affecting the agriculture industry.

Robert Hutchison presented Hotchkiss with a clock. Hotchkiss also has his name engraved on a perpetual plaque housed at the Maryland Department of Agriculture. "I was absolutely stunned, thrilled and honored," said Hotchkiss. "I strongly believe in serving my community and all of you are my community. I promise to bring you a paper you deserve and we can be proud of. Thank you all."

Hotchkiss was born in Wisconsin, then moved to a 1,000-acre Guernsey dairy farm in New Jersey at age 9. He attended Lawrenceville School, then Princeton, Columbia and Rutgers to pursue a career in journalism. He rode a horse to graduation in Rutgers Stadium in 1951 and went to work the next day as a cub reporter in Newark, New Jersey. He edited daily and weekly papers in New Jersey and Colorado before coming to the Eastern Shore as editor of The Star Democrat. As the founding editor of the Central Shore Farmer, he jumped at the chance to turn that small weekly insert into a major agricultural newspaper, *The Delmarva Farmer*, in 1978. He remains senior editor at American Farm Publications, in addition to running his own business, Agri-Media Services Inc., which offers media relations services to farmers and



Robert Hutchison, Bruce Hotchkiss, and Donald Maring, MGPA President.

farm organizations with their outreach and education programs.

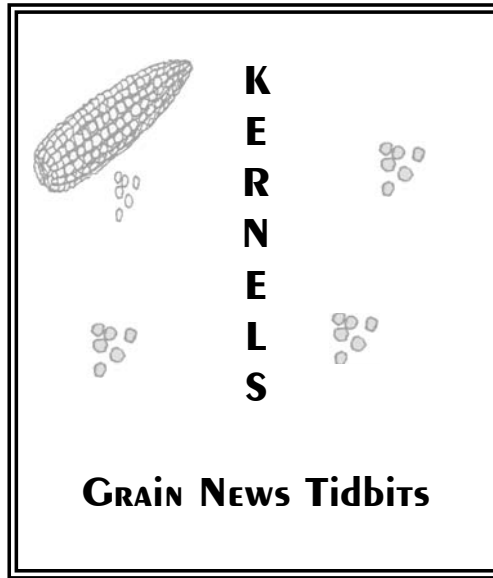
Mark Powell, MDA Chief of Marketing and Agricultural Development and former Delmarva Farmer editor, said, "We owe a debt to Bruce Hotchkiss for setting the tone of decency, humanity and respect that has distinguished the Delmarva Farmer for those of us who followed in his footsteps."

WRDA Passes

America's inland navigation system plays a critical role in our economy, moving more than a billion bushels of grain (60 percent of all grain exports) to export markets. These water highways relieve congestion on over-crowded interstates and railways that run through cities. Approaching old age, however, many locks cannot accommodate modern barging practices, which use 1,100 foot barge-tows. Many of the locks are only 600 feet long, forcing barges to use the time-consuming and dangerous "double-locking" procedure.

The President's recent veto was overridden on the Water Resources Development Act (WRDA) which authorizes construction of 1,200 foot locks and makes hundreds of other necessary changes to crucial waterways, such as environmental restoration, port modernization, flood control, hurricane protection, water supply, irrigation and beach nourishment and recreation.

Passage of the WRDA was crucial to farmers who depend on the inland waterway system to deliver their crops to the global marketplace and to businesses which rely on the system to move their raw materials and products.



Nashville hosts the National Commodity Classic

The National Commodity Classic, annual convention and trade show of the American Soybean Association, the National Corn Growers Association, and the National Association of Wheat Growers, will be held February 28-March 1 in Nashville, Tennessee at the Gaylord Opryland Hotel. Charlie Cook, recognized as an authority on U.S. elections and political trends, will provide valuable insight into the upcoming U.S. elections. For conference details and reservations, visit www.commodityclassic.com.

Bowling attends National Leadership Academy

Chip Bowling, MGPA Vice President and farmer from Charles County, attended the National Corn Growers Association Leadership Academy in Greensboro, NC and Washington, DC. Participants receive training in media, presentation and association leadership development, coalition building, interact with legislators, and devising grassroot legislative strategies.

Producers Online

The National Corn Growers Association has launched two new websites to help educate consumers with facts, videos, downloadable materials, and interactive opportunities. The first thanks farmers for their dedication in producing the safest, most abundant food and feed supply on earth, while supplying for the demands of cleaner-burning, renewable energy. This site is at www.farmersmatter.org. The second website takes a lighter look at agriculture and events that affect producers on the Blog www.corncommentary.com. Short for "Web log", Blogs are specialized sites that allow an individual or group to share a running log of events and personal insights with online audiences. Visit the sites and see what farmers are saying and consumers are talking about!

Maryland Winners in National Contest

For 42 years, the National Corn Yield Contest (NCYC) has challenged growers across the nation to test their corn production skill and knowledge.

In the 2007 Contest, a Virginia farmer from Charles City, David Hula, reported the highest yield of 385.5861 bushel/acre on no till/strip till irrigated land using Pioneer 33M57.

Winners receive national recognition in publications such as the NCYC Corn Yield Guide. During the 2008 Commodity Classic in Nashville, Maryland's state winners will be presented awards at the NCYC Breakfast.

CLASS	PRODUCER	HYBRID	YIELD
Irrigated	Goody Hill Farms	DEKALB DKC66-21	277.4553
	Clearview Farms Inc.	DEKALB DKC61-72	275.3457
Non-Irrigated	Russell Baker	Pioneer 33B54	214.0246
	Thomas Dell	Pioneer 33M57	206.5574
	Gregory W Dell	Pioneer 33A88	202.1820
Ridge Till Irrigated	Michael R Bostic	Pioneer 34P94	253.9914
Ridge Till Non-Irrigated	Cathy Bostic	Pioneer 33D13	206.1455
No Till / Strip Till Irrigated	John R Windsor	Pioneer 33B54	293.8046
	Windsor Brothers	Pioneer 33B54	284.9396
	John R Dulin	DEKALB DKC63-39	276.2061
No Till / Strip Till Non-Irrigated	Blue Valley Farms	Pioneer 33D14	256.1114
	Grimmel Farms	Pioneer 35P10	249.4980
	John A Rigdon	Campbell 69-36	243.9177

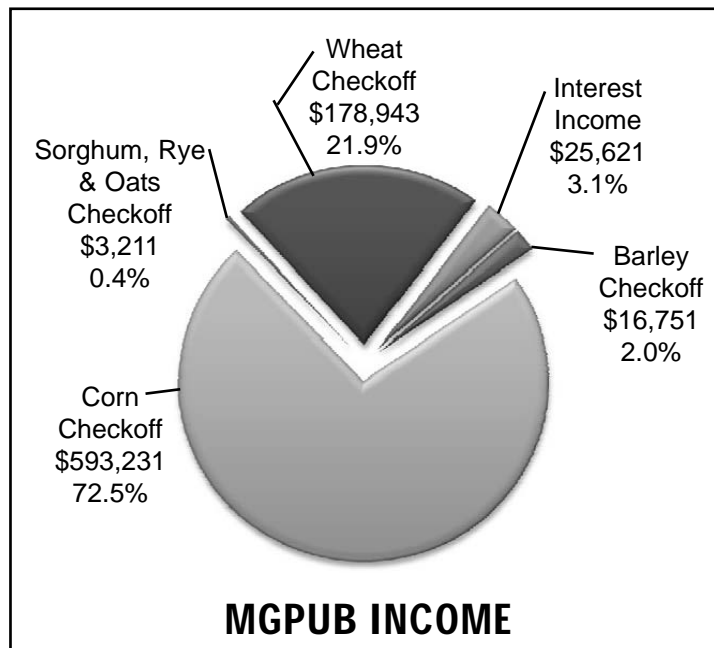


MGPUB 2007 Annual Funding Report

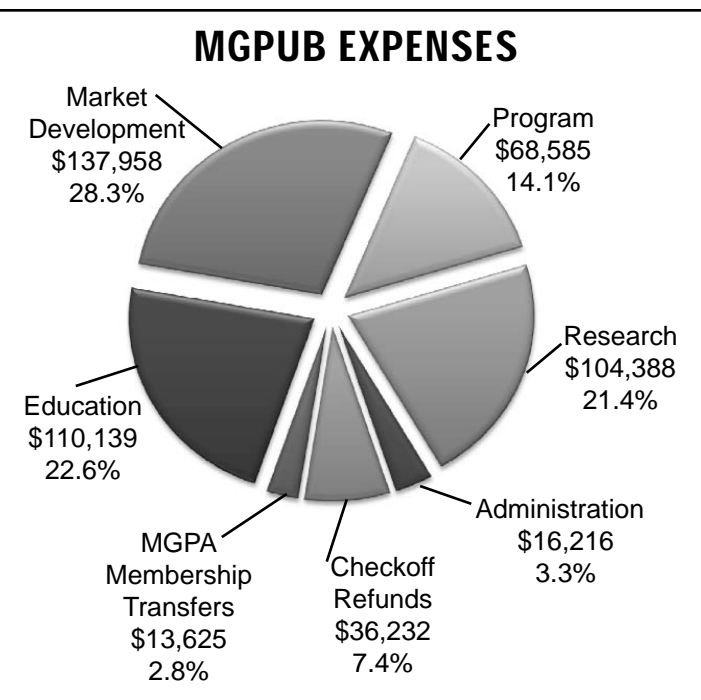
I am pleased to report that even though the drought hit many of us such that our yields fell well below normal, grain prices were at the highest levels we've seen, which helps offset the losses in our yields so we can once again put the planter in the field for next season.

The Maryland Grain Checkoff Program funding remained strong, also thanks to the high grain prices. We greatly appreciate your support of the program, as it illustrates the good work of farmers supporting farmers. We use the funding on projects that have direct benefit to Maryland producers, as you will see in the following report of our latest grant-funded projects. Our work focuses on research to improve the growing process, educating more people about agriculture in Maryland and the issues we face, and marketing our products and byproducts from the local market to international arenas.

Funding of national organizations has proven of great value as their teams of knowledgeable professionals work to protect our grain interests at the national level to ensure a level playing field in trade discussions, and to market our products across the world.



With the concern over falling numbers in 2006, the Board requested research conducted by the University of Maryland and Virginia Polytechnic Institute. See results of their research on pages 6 and 7. In August, the MGPUB Board of Directors visited the Hanover Foods in Pennsylvania, a significant user of our wheat, to discuss their needs with their management and production control staff. Mason-Dixon Dairy hosted our board meeting and took the group on tour of their facilities. They are a model in progressive farming as their innovation and inventions provide the tools to successfully complete in today's marketplace. Our tour concluded with Windridge Farms, where the production of biodiesel on a small scale is showing potential for growth in Montgomery County.



As you read the funding report of projects funded in the last year, we welcome your thoughts as to the results and what issues are meaningful to you. Visit the website at www.marylandgrain.com for further details and contact information on the grant recipients.

Our goal is simple. We strive to address the needs of growers by funding projects that will provide advancements in research, marketing and education so farming in Maryland is productive, prosperous and protective of our resources so our farms may be passed on to future generations.

~ Donald Maring, MGPUB President

FALLING NUMBER RESEARCH

✓ Pre-harvest Sprouting *University of Maryland*

This grant supported the testing of the wheat varieties included in the Maryland state variety trial for their Falling Number values.

The Falling Number test measures the soundness of wheat for baking purposes. When grain has sprouted its Falling Number is lowered.

Most varieties tested in the 2006 harvest had a Falling Number of approximately 400 when not sprouted, the average for all varieties was 200 when conditions favored pre-harvest sprouting. There were significant differences among varieties for Falling Number values and some retained high Falling Number values even under conditions favorable to pre-harvest sprouting.

For specific results with variety listings, as well as the latest updates, visit the University's Cropping Systems website at www.mdcrops.edu. José Costa and Robert Kratochvil conducted this research.

2009 MG PUB Grant Program

**Application Deadline
December 1, 2008**

Call 410-956-5771
or visit
marylandgrain.com
for grant application
and submission details

DISEASE, WEED & PEST CONTROL

✓ Control of Perennial Weeds in Corn *University of Maryland*

Two studies were initiated in the fall of 2006 by Ronald Ritter for the control of Canada thistle in non-cropland. These treatments were to be followed in 2007 to see what level of Canada thistle control was achieved after 12 months. One study compared ForeFront, Milestone, 2,4-D, Banvel plus 2,4-D, and Overdrive as fall applications. The other study compared fall applications of Ally plus Glean (Cimmaron Plus) at three rates: applied alone, or in combination with either Milestone, ForeFront, or 2,4-D.

In the first study, all treatments seemed to provide good Canada thistle control when rated 2 months after application. There was no injury observed to the tall fescue site where the study was performed. By July of 2007, treatment differences were observed. Milestone provided the highest level of Canada thistle control. Control with ForeFront was rate dependent. The least level of Canada thistle control was provided by fall applications of 2,4-D, followed by Banvel plus 2,4-D and Overdrive.

In the second study, all treatments provided excellent Canada thistle control when rated 2 months after application. However, tall fescue discoloration was observed especially with the highest rates of Ally plus Glean that were tested. When these plots were observed in July of 2007, Ally plus Glean, applied alone or with 2,4-D, provided less than 50% control of Canada thistle. Ally plus Glean, when tank-mixed with Milestone or ForeFront provided good control when evaluated in July, 2007, with the tank-mix combination of Ally plus Glean plus Milestone providing best control.

A study was conducted in 2007 at the Wye Research and Education Center to compare the activity of Callisto, Impact, and Laudis on johnsongrass control in corn. Applications were made in combination with Atrazine or Atrazine plus Accent. Impact in combination with Atrazine provided the highest level of johnsongrass control when compared to Callisto or Laudis. When Accent was added to all three products, johnsongrass control was equivalent with all three materials by the last rating.

✓ Control of Weedy Grasses in Small Grains *University of Maryland*

Three studies were conducted in 2007 at the Central Maryland Research and Education Center located in Beltsville by Ron Ritter. One study compared different herbicide programs. These included the following: a new formulation of Axial (coded A13617), Osprey and Hoelon. Each was applied alone or tank-mixed with either Harmony GT, Harmony Extra, or Prowl to observe crop injury and Italian ryegrass control. The Osprey combinations provided the highest level of wheat injury; however, yield was not affected. Combinations of A13617 or Osprey with either Harmony GT, Harmony Extra, or Prowl provided over 90% Italian ryegrass control by the last rating. Hoelon, applied alone or in any tank-mix, provided the least amount of Italian ryegrass control. Prowl, applied alone, did not control Italian ryegrass and resulted in yields similar to the untreated checks.

Another study compared two rates of Everest plus Glean (known as Finesse Grass and Broadleaf) to Osprey. These comparisons were applied at three different times - early fall, mid-fall, and early spring. All Everest plus Glean applications provided some degree of wheat injury. By the last rating, all Everest plus Glean applications provided 100% Italian ryegrass control. Little to no injury was noted from Osprey. Best Italian ryegrass control with Osprey was achieved with the mid-fall and early spring applications. Wheat yields did not vary.

The last study compared Italian ryegrass control with Axial versus Osprey. Applications started on March 1 and continued every other week until May 15. The objective was to see how late either product could be sprayed and still achieve good Italian ryegrass control. Best Italian ryegrass control was achieved when either product was applied from March 15 through May 1. Applications made May 15 did not provide any level of Italian ryegrass control, resulting in reduced wheat yields. Osprey applications made March 1 also resulted in poor Italian ryegrass control and resulting loss in wheat yield. It is interesting to note that the applications made May 1 were applied to Italian ryegrass averaging 18 inches in height.

DISEASE, WEED & PEST CONTROL

✓ Genetic Improvement and Testing of Small Grains for Maryland *University of Maryland*

This grant supported the development of new varieties of small grains for Maryland by Jose Costa. After several years of testing, a promising new soft red winter wheat line (MV5-46), was released as Chesapeake. It performed well over the last three years and was increased for commercial distribution. This variety is high-yielding, has excellent test weight, and is resistant to powdery mildew. It is susceptible to stripe rust, however, like most other currently available varieties. Certified seed became widely available to growers in the fall of 2007.

A backcross program, aided with DNA markers, is being used to produce a scab resistant variety, with McCormick being used as the parent variety. Additionally, lines with stripe rust resistance are being used in a final crossing of this material, so the final variety will include stripe rust resistance. Furthermore, DNA markers are being used in other selected crosses to improve scab and powdery mildew resistance in wheat. New hullless Maryland-bred barley lines are being tested in 2007/2008. Selected hullless barley lines will be entered in replicated tests in 2008/2009.

This grant also supported yield testing of current varieties and new lines of winter wheat and winter barley available for planting in Maryland. This information and updates were posted in July 2007 at www.mdcrops.edu.

✓ Efficacy of Avitec Seed Treatment *University of Maryland*

Foraging by blackbirds and crows on corn seed and seedlings can cause considerable stand reduction. This damage is expected to increase because Lindane, a relatively effective bird repellent, has been voluntarily cancelled and replaced by newer seed treatments, which have no effect on birds. This project determined if Avitec can prevent stand reduction under field use conditions, and identified potential adverse effects on germination, plantability, and compatibility problems with other seed treatments. This was addressed through strip tests conducted by Galen Dively in nine fields on six research farms.

✓ Evaluation of Wheat Variety Resistance to Wheat Spindle Streak Mosaic Virus *University of Maryland*

Wheat spindle streak mosaic virus (WSSMV) is a soil-borne disease of wheat that can easily escape detection. Symptoms of this disease, a light green to yellow mosaic pattern in leaves, may actually disappear when weather gets warm. Without careful monitoring of a crop, the cause of reduced yields is therefore easily missed. Because WSSMV is soil-borne and patchy it would be easy to think that a poor yield was due to a fertility or pH problem. Knowing what to look for and when helps to reduce the confusion, but ultimately this disease will have to be combatted with resistant varieties.

Many public and private seed companies have limited information on the resistance of their varieties, but thanks to the grant from the MG PUB, Arv Grybauskas is maintaining and improving a site that has the virus and its vector as a wheat disease nursery. Results from the evaluations show that there are a full range of responses from very susceptible varieties to very resistant ones.

The results are available in the University of Maryland Extension Bulletin number 237, "Pest Management Recommendation for Field Crops". The publication is updated annually and is available in print or on-line and can be found listed under Extension publications at www.agnr.umd.edu.

Due to the cool, wet spring, all field sites were planted late and so bird activity was very low, except for one site at Poplar Hill. Bird damage is less likely to occur as the planting season progresses and other sources of food, such as insects, become available. The overall stand density in the Avitec treated test strips across the nine fields was not significantly different from the stand density in the paired untreated strip, so could not demonstrate efficacy of Avitec seed treatments in the test strips. The stand density at one field site and the plant growth at two field sites may have been negatively affected by the Avitec treatment. However, further studies are needed to conclusively demonstrate the results. An alternate approach to generate data of the repellency effects will be used in 2008 trials.

FALLING NUMBER RESEARCH

✓ Environmental and Morphological Effects on Pre-harvest Sprouting of Wheat *Virginia Polytech Institute*

Pre-harvest sprouting in wheat results in reduced grain quality which reduces the price growers receive for their grain. The goals of this study, lead by Wade Thomason and Kelly Burt, are to identify the roles of wheat cultivar (genetics), environmental conditions, and the spike morphological characteristics in determining wheat pre-harvest prouting susceptibility.

Grain from eighty cultivars, sampled from field plots, was evaluated for inherent genetic dormancy. The following released varieties were highly dormant: Coker 9553, Agripro Magnolia, Agripro Branson, Pioneer 26R12, Agripro Panola, Southern States MPV 57, AGS 2050, USG 3665, and McCormick.

Six lines were found to have low levels of innate dormancy, for example, grain is more prone to pre-harvest sprouting: Southern States 520, Vigoro Tribute, Southern States 8404, Vigoro 9713, Southern States 8309, and Pioneer 26R15.

To measure the degree of damage from pre-harvest sprouting, samples from plots with delayed harvest and from greenhouse studies where controlled rainfall events were employed are being tested for falling number by the USDA-ARS Soft Wheat Quality Laboratory.

✓ **Evaluating Application Timing of Herbicide**
University of Maryland

In barley and wheat Harmony Extra herbicide gives excellent control of many winter annual weeds and partial control to other weeds such as Canada thistle and vetch (common and hairy). Application use rates are from 0.3-0.6 oz./acre and can be applied through a solution of water or liquid fertilizer. Application timing is from the two leaf stage but before the flag leaf is visible.

Farmers and commercial applicators are blending Harmony Extra with either the greenup fertilizer solution or with liquid nitrogen at Feeks growth stage five to six to save trips over the field and application costs. There can be significant burning to new plant tissue the later nitrogen solution is broadcast over wheat or barley. It has been reported that wheat sprayed with Harmony Extra blended with fertilizer solution reduced yields. For the past three years, Ronald Mulford has been evaluating several application timings of Harmony Extra herbicide mixed with either water or fertilizer solution.

This study shows that notill wheat yields will be less than with minimum tillage, unless some effort is made for uniform spreading of residue coming over the straw walkers and screens, and some slight soil disturbance as with a "Turbo Till" implement or simply running a coulter cart in front of the notill drill. If planting notill after corn, it is helpful if planting can be delayed by a week or more so that the residue from the corn has a chance to dry so the coulters on the notill drill will cut through it rather than push it into the seed trench.

FIELD MANAGEMENT

✓ **Improving Efficiency of Surface Applied Poultry Manure in Notill Corn Production**
University of Maryland

Many farmers in Maryland would like to plant notill corn following a surface application of animal manure, particularly poultry manure. However, data shows notill plantings of corn following a surface application of poultry manure makes poor recovery of the surface applied nitrogen in the manure. This may happen from two methods, 1) nitrogen volatilization, and 2) nitrogen movement by rainfall.

Ronald Mulford evaluated several tillage methods after poultry manure application, including notill, shallow incorporation methods, and a complete tillage system of chisel plowing/discing two times. Corn was planted after the manure application and any tillage. Tillage methods occurred within 24 hours of the manure application. Results showed the following:

- Agrotain Plus improved efficiency of nitrogen in poultry manure in notill, tillage one time with notill drill, and with the Turbo till for all three years of the study.

- Agrotain Plus or Agrotain Super N was more efficient in improving yields with the sidedress nitrogen treatments. The three year average showed an increase of nearly 14 bu/acre. Those not sidedressed saw an average yield increase of almost 8 bu/acre.
- Surface applied poultry manure with no type of incorporation gave the poorest corn yields.
- The less aggressive tillage implements, when poultry manure is treated with Agrotain Plus, can be used as efficiently as the more aggressive implements in improving the use of broiler manure as nutrient source in reduced tillage systems of corn production.
- Of the poultry manure applications not receiving Agrotain Plus, highest yields came from using the Zone Till implement after the broiler manure was applied.

The Maryland Cropping Systems website maintained by University of Maryland provides the latest in research and education to help growers with management decisions. Visit the site at www.mdcrops.umd.edu.

✓ **State Corn Hybrid Test: Inclusion of Benchmark Hybrids**
University of Maryland

Farmers in Maryland utilize a number of resources to attain information regarding selection of corn hybrids. One is the University of Maryland's annual Corn Hybrid Performance Test results conducted by Robert Kratochvil. This hybrid evaluation program was significantly improved in 2001 when funding from MGPUB was first obtained to support inclusion of some benchmark, check hybrids in the test. This became necessary because the University of Maryland testing program is a fee-based program and many of the hybrids that seed companies enter are their newer genetics that they either are just starting to market or will soon market. Second, one of the leading seed companies made a corporate decision to no longer submit entries into fee-based University managed tests. This eliminated the inclusion of hybrids from a company that many farmers consider to be the standard-bearer for the industry.

The 2007 season was the seventh consecutive year that MGPUB has funded the corn test for this purpose. During 2007, nine check hybrids representing six brands were included in the test. This MGPUB grant has re-established the University of Maryland corn-testing program as a valuable resource for selection of corn hybrids. The corn test results can be found at the University's Cropping Systems website at www.mdcrops.umd.edu.

FIELD MANAGEMENT

✓ **Planting Techniques for Small Grain Cover Crops** *University of Maryland*

Maryland pays participating farmers who plant cover crops with a tier-based system that encourages early planting dates. A variety of planting techniques (drill no-till into either previous crop residue or tilled soil; broadcast seed and lightly incorporate; broadcast seed and chop residue [generally corn stalks]; aerial seed into growing crop) are recognized for establishing cover crops. Concerns and opinions of farmers and nutrient regulatory agencies vary about the agronomic, economic, and nutrient management benefits for each of these techniques.

In 2007, MGPIB funded a project by Robert Kratochvil to evaluate cover crop planting techniques. Wheat and rye cover crops were planted using the aforementioned techniques plus treatments that broadcasted the seed with no other operation at two Maryland locations on two different dates (prior to October 1 and on or after October 30). Weekly seedling emergence counts have tracked stand establishment progression for each planting treatment.

The 2007 cover crop planting season was highlighted by extremely dry soil conditions until substantial rain fell during late October. Even though dry soil conditions prevailed for the first planting date, the no-till drilled wheat and rye had 25 seedlings/sq.ft. within 1-2 weeks post-planting. Broadcast wheat followed by light disking had a mixed response with no emergence until late October at one location while the other location had 30 seedlings/sq.ft. two weeks post-planting. Seedling emergence rates were slower for the second planting date reflecting the cooler temperatures that accompany early November. Again, the no-till drilled wheat and rye had the best response, 30 seedlings/sq.ft. emerged by three weeks post-planting. Broadcast wheat with a light disking did better during the second planting (approximately 20 seedlings/sq.ft. three-weeks post-planting) reflecting the better soil moisture conditions following the late October rains. And, as observed with the early planting date, the other broadcast planting treatments had seedling emergence rates at 3-4 weeks post-planting that ranged from 7-15 seedlings/ft². Based on these early results, stand establishment for wheat and rye cover crops is best when drill planted.

✓ **Utilizing Conservation Tillage to Minimize Nutrient Losses from Poultry Litter Applied in Grain Production** *University of Maryland*

Joshua McGrath and Frank Coale conducted research at University facilities and on cooperating Maryland farms in 2006 and 2007 to assess tillage options in relation to poultry litter usage in grain production. The research demonstrated that commercially available conservation tillage techniques could be successfully used to partially incorporate poultry litter in reduced tillage grain production systems and reduce nutrient losses to the environment, while preserving surface residue and soil conservation conditions.

The results from this work are being used to develop realistic guidelines for Maryland farmers, enabling them to enjoy the production benefits of reduced tillage and efficiently utilize poultry litter as a nutrient source for corn production, while continuing their good stewardship of the environment.

✓ **The Role of QoI Fungicides in Field Corn Production** *University of Maryland*

The newest class of fungicides sometimes known as strobilurins or by an acronym, QoI, referring to their mode of action have occasionally been associated with positive yield responses or especially for corn improved standability. These useful responses have not necessarily been associated with direct action against plant pathogens. Prior to the development of QoI fungicides, field corn produced for grain would only rarely benefit economically from a fungicide application. The primary situation where fungicides would provide an economic return was in fields of susceptible hybrids that were heavily affected by diseases like gray leaf spot. Even in those cases economic returns were highly variable. There is currently little hard data on the effect of QoI fungicides on stalk rots directly, or indirectly, or on yield effects in the absence of leaf diseases. This research project funded by MGPIB conducted by Arv Grybauskas is in the process of obtaining hard evidence on fungicides, especially those containing strobilurin chemistry, and their potential as a predictable tool for corn production in the mid-Atlantic.

✓ **Enhancing Maryland-Grown Wheat Consumption for Health Promotion and Disease Prevention** *University of Maryland*

The goal of this research is to promote the production and consumption of value-added Maryland-grown soft wheat varieties for disease prevention and health promotion. Liangli Yu leads the study.

Health beneficial factors of food products are critical to their market competitiveness. Increasing evidence has supported the role of whole-grain consumption in reducing the risk of chronic conditions such as cardiovascular disease and cancer. It is thought that antioxidants present in whole-grains may play a significant role.

Food processing induces complex chemical changes in food systems and has the potential to affect antioxidant properties. This study evaluated the effects of processing on whole-wheat antioxidant properties and phenolic acid contents, using a whole-wheat pizza crust model.

The study demonstrates for the first time that changes in processing steps including dough fermentation time and baking conditions have the potential to increase whole-wheat pizza crust antioxidant properties, while changes in bran particle size are not likely to affect these antioxidant properties.

This research generated several research articles and a U.S. patent application on methods of making and using nutritional compositions, and countless media reports on 'healthier pizza crust' around the world including CNN, ABC, NBC, and BBC, which promote the visibility of MGPIB.

EXTENSION EDUCATION

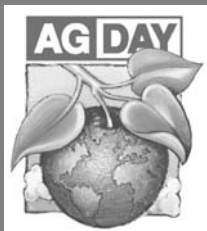
✓ **Nutrition White Papers**
Wheat Foods Council
www.wheatfoods.org

Two nutritional issues have emerged that are particularly relevant to the grain industry. The first is the benefit of folic acid fortification and the role of grains, and the second is the appropriate use or misuse of the glycemic index as a tool in determining a healthy diet.

The Wheat Foods Council (WFC) carries a strong reputation for its credibility in part because of its collection of White Papers designed to address a technical issue and translate it into language that is easily understood. With the development of new White Papers on folic acid and the glycemic index through the MGPUB grant, WFC has provided media, educators, medical professionals, and consumers with current and accurate information to reinstate the good image of all grain foods and continue to send the message that grains are a significant part of a healthy diet.

✓ **National Agriculture Day**
Ag Council of America
www.agday.org

Each year, the National Ag Day program coordinates activities and provides resources for the agricultural industry to promote American agriculture. A media event on Capitol Hill in Washington, DC culminates the promotion to educate millions of consumers each year on how agriculture provides almost everything we eat, use and wear on a daily basis.



National Ag Week
 March 16-22, 2008

✓ **Grain Marketing Educational Program - Statewide**

The *Road to Marketing Success* and *Winning the Game* are grain marketing workshops that teach farmers how to avoid common mistakes in grain marketing, utilize crop insurance strategies and explore key elements of a marketing plan and strategy. A market-simulation game gave producers a hands-on approach to implement a marketing or storage plan by reacting to a real marketing year. Six pre-harvest and six post-harvest marketing workshops were held around the state with 242 total participants. Producers reported learning more about setting minimum prices and how to react to market fluctuations.

✓ **Learning about Grains - Carroll**

This project promoted the use of whole grains by daycare providers when providing health conscious snacks to younger children and youth. At an all day training, a display educated attendees about the whole grains farmers grow in Carroll County, pictures of those grains growing in the fields, and grains after they have been harvested. Directions and uses for food consumption were displayed. After discussion and answering many questions about the display, they were offered a sample of a whole grain pretzel, given the recipe and dry ingredients to try for themselves. Other whole grain recipes were also given to the daycare providers.

✓ **Explore Maryland Agriculture: Now and Then - Allegany**

Over a two-day period in October 2007 over 200 fourth grade students, teachers and parents from seven elementary schools in Allegany County had a first-hand experience with grains.

The students participated in 3 stations which featured grinding wheat by hand, interacting with live animals, going on a real hay ride, and creating a healthy snack from grain products. At the animal stations students learned what grains products these animals consume. University of Maryland Cooperative Extension faculty and staff facilitated the event with the help of 4-H volunteers, Farm Bureau, and Ag Expo members.

✓ **Close Encounters with Agriculture - Montgomery**

Close Encounters with Agriculture is an outreach agricultural awareness program geared for Montgomery County 4th grade students. Since 1993, almost 40,000 students have participated and gained an awareness and appreciation for agriculture's importance in their daily lives.

About 52 elementary schools from all over the county participated over a 3-week period in early spring and in the fall. Learning activities are short and hands-on to keep students' attention. Production agriculture, environment and nutrition are the focus of the program. Six hands-on learning stations consisting of grain and grain products, dairy, beef, swine and goats, horticulture and horses are used to teach production agriculture concepts. The environmental segment emphasizes the positive relationship farmers and farming practices have on the environment. Students are taught and shown how all sources of pollution impact the Chesapeake Bay. The nutrition segment emphasizes the relationship of agricultural products to nutritious diets and focuses on uses and benefits of grain products.

Participating schools and teachers are provided with teaching packets containing learning activities for the students prior to their field trip to the Extension Office Farm Park. Follow up activities are also included in the teaching packet including pre/post tests to measure the students learning.



EXTENSION EDUCATION

✓ All About Grains - *Caroline*

Over 300 Caroline County elementary children benefited from 4-H school enrichment classes focusing on agriculture. The objectives were to help children understand how grains are used for feed for livestock growth. Also shared was the importance of grains in the daily diet of all.

Two ag safety programs saw over 300 youth participate in nutrition healthy lifestyles lessons with a focus on eating grains.

The annual tractor/farm equipment safety classes provided by Maryland Cooperative Extension had 11 youth participants. This grant provided numerous scale model items for safety training.

During the Caroline-Dorchester County Fair many citizens viewed the grant display focusing on how poultry and livestock utilize a variety of grains in their diets. This display also included grains used by people in pasta, breads etc. During the Delmarva Chicken Festival approximately 3,000 people viewed the poultry-grain display and actively participated in hands-on lessons about what chickens eat and how they are raised on Delmarva.

✓ Kids Growing with Grains

Washington

A fall program at the Western Maryland Research and Education Center brought 392 youth and 47 adults to participate in three learning stations:

Station #1 - Grain Nutrition

Students learned about MY Pyramid; identified food products made from grains, and the nutritional value and health benefits of grain products. Students learned the function of each ingredient, science, math, reading and team-building skills through making wheat bread in a bag.

Station #2 - Animal Science

Students interacted with live animals and learned about the different types of digestive systems between various livestock, the digestion process, and different uses for grains in animal feeds and roughages.

Station #3 - Grain Production

Students learned the anatomy of a plant and the difference between several grain seed characteristics, and discussed the planting, growing and harvesting of various grains. They took a wagon ride through the research farm and completed a grain mosaic.

In-class activities were provided for those unable to visit the Center. Participants received grain nutrition and production facts, made the grain mosaic and bread in a bag. This reached an additional 122 youth and 8 adults.

Frederick

Frederick County youth took the field trip of a lifetime as six elementary schools visited the Western Maryland Research Center to learn about grains at four learning stations:

- Students begin with a wagon tour of the farm viewing fields in production, valuing machinery and recognizing grains from field to table. Each student made a grain jar with five grains grown on the farm.
- At the corn station students learned the many uses of corn, everything from grits to gasoline and corn syrup to crayons. Then the students made tortillas using masa.
- The nutrition station explained the health benefits of eating grains, especially whole grains. Students sampled steel cut oats and made buckwheat pancakes.
- At the animal station students met cows, pigs, chickens, horses, and sheep, and learned how much grain the animal is fed to produce for our needs. Teachers report this is the favorite part of the field trip!

Each student received a spiral bound recipe booklet to take home so they could prepare grain foods at home and share their field trip experience with their families.

✓ Ag on the Move/Fiber Sweep
Maryland Agricultural
Education Foundation
www.maefonline.com

The MGPIB joined the Maryland Agricultural Education Foundation (MAEF) as a partner in an exciting initiative to develop and disseminate Maryland-specific educational resources for use in classrooms and public forums. The *Ag on the Move* initiative has two elements: the Maryland Agriculture Showcase, a mobile public exhibit, and four Maryland-specific resources that are combined into the Maryland Resource Kit: *Take Me Out to the Cornfield* video/DVD, Maryland Commodity Map, Digital Atlas of Maryland Agriculture CD, and an accompanying Teachers Guide. Over 2,100 educators have been trained to use the Maryland Resource Kit. These resources are in use in classrooms and events across the state to creatively provide over 100,000 students and more than 70,000 members of the public information about Maryland agriculture and its impact on the environment, economy, and every individual.



Fiber Up for a Clean Sweep is a new lesson created for youth promoting nutrition. From this 50-minute lesson, students learn what fiber is and how it benefits their bodies. Students strain and compare different foods that do and do not contain fiber. The lesson is targeted for students in grades 3-5 and addresses an important targeted area of education today, nutrition.

✓ **Maryland Envirothon**
www.mascd.net/envirothon

The Maryland Envirothon is an environmental educational competition designed for high school students. It enhances school science curriculum by providing hands-on field based activities and instruction from natural resource professionals. Training is scientific, practical and fundamental.

During the school year, students are trained and tested in five natural resource areas: aquatics, forestry, soils, wildlife and a current environmental issue. Last year, 896 students from 19 counties were presented with the Fifth Issue Objective of "Renewable/Alternative Energy." Teams had the opportunity to work directly with biologists, foresters, soil scientists, and other related professionals to be trained for local, state, and national competitions.

At the state event, attention was placed on tree classifications, soil classifications, wildlife-species identification and an oral presentation related to renewable/alternative energy. There were 19 teams comprised of 103 students. The winning team was from Frederick County, who represented Maryland at the Canon Envirothon. The team placed 16th out of 53 teams.

While schools are mandated to teach environmental education, many have had to cut related activities. The Envirothon continues to fill the void by offering students multiple educational needs. All training materials, activities and transportation needs are offered to students free of charge. The Envirothon remains committed to leaving no student behind due to related costs associated with the program.

INVESTMENT IN LEADERSHIP



✓ **LEAD Maryland Foundation, Inc.**
www.leadmaryland.org

Maryland's agricultural sector is increasingly buffeted by external and internal forces for change. Those changes include, for example: population growth - much of it sprawling onto rural landscapes; globalization of markets; increasing focus on the quality of the environment; and an aging rural population. To successfully adjust to such forces, the number and capacity of Maryland's rural and agricultural leaders must increase.

The LEAD Maryland Foundation, Inc. (LEAD) operates to help meet the rural and agricultural leadership challenge. LEAD Maryland's leadership development fellowship program involves diverse class groups of 20-25 Fellows in a two-year program designed to increase participants' assurance, skills, and knowledge for mobilizing people to solve problems. LEAD prepares emerging leaders to seek solutions and communicate in ways that will enhance the future of Maryland agriculture. To date, there are 114 LEAD Fellows. LEAD's current class, Class V (2007-2008), completed its first four seminars in 2007, thanks to the support of grantors such as the MG PUB. Class V will complete their second year of the Fellowship in 2008, participating in four 3-day seminars; a Washington, D.C. Study Tour; and an International Study Tour.

✓ **Young Farmers Annual Meeting**
Maryland Young Farmers

The Maryland Farm Bureau Young Farmers held their annual retreat in March 2007. There were 125 young farmers in attendance from 19 counties as well as the Maryland FFA state officers. Young farmers had the opportunity to participate in the Discussion Meet, which is a public speaking panel discussion on four different agriculture topics. The group also went on farm tours and enjoyed networking with each other. Education is always important to the young farmer organization and they were able to further their education with programs about Identity Theft, Leadership Development and Family relations that were presented at this year's retreat.

Members of the young farmer program sit on boards of directors at the county and state level, are active in their local community, help further agricultural education in their local classrooms, and move the organization in a positive direction. Whether their particular talent is public speaking, writing, teaching, or simply their love of their community, the individuals that devote their time and effort to the betterment of the agricultural community through active membership in these programs, are the backbone of this grassroots organization. Their efforts to help improve the agricultural community and further the economic viability of farming in the state would not be possible without the help of the Maryland Grain Producers Utilization Board.

✓ **MD FFA Foundation**
www.mdffaafoundation.org

The Maryland Grain Producers Utilization Board was named the 2007 Outstanding Sponsor of the Year by the Maryland FFA Foundation. Lynne Hoot accepted the award on behalf of MG PUB at the 2007 State FFA Convention. MG PUB is recognized as a 2 Star Partner for their level of support to the Maryland State FFA Program. In 2007, MG PUB sponsored four FFA career development events (CDE), Agricultural Issues, Junior Extemporaneous Speaking, a Proficiency Project and two Agriscience Events, a State Convention speaker and a National FFA Officer who assisted with leadership development activities and workshops during the State Convention.

CDE sponsorships provided funds to recognize student achievement and to reduce student costs while representing Maryland at the National level of competition. In October, 127 FFA students attended the National FFA Convention in Indianapolis, Indiana where they participated in 24 National CDE events. One Maryland team placed fourth in the nation, four individuals placed in the top twenty in their respective Career Development Events, and one student was awarded a \$500 college scholarship. Ten Maryland students were awarded the American Agriculturalist Degree, the highest degree that can be awarded to an active FFA member. The MG PUB grant helped to provide students these valuable educational and leadership experiences.



NATIONAL CONNECTIONS

✓ **U.S. Grains Council**
www.grains.org

The U.S. Grains Council works around the world to create demand for U.S. grains and grain products, which translates into better prices for all U.S. producers. From harmonizing grain inspection procedures in Egypt to familiarizing Middle Eastern buyers to the U.S. export system to introducing new grain products to countries around the world, the Council continuously promotes the quality and reliable supply of U.S. corn and corn products. As a leading cooperator with USDA's Foreign Agriculture Service, member contributions are multiplied at least three times by federal matching funds, enhancing the Council's market development capabilities.

Grain products made from corn, including DDGS, polylactic acid (PLA) and corn gluten feed and meal (CGF/M), are in demand internationally. PLA, a biodegradable plastic made from corn starch, is gaining popularity in Japan and Taiwan. In 2006, Taiwan alone imported 4,800 tons of PLA resin, the equivalent of 12,000 tons (472,000 bushels) of corn. Demand isn't expected to slow as the country is expected to reach about 400,000 tons of PLA a year, an amount equal to 1 million tons (39 million bushels) of corn. Approximately 1.8 million metric tons of U.S. DDGS, a co-product of ethanol production, were sold to international customers between September 2006 and August 2007. The Council has been systematically introducing DDGS as a feed ingredient to livestock producers as close as Mexico and as far as Taiwan.

✓ **U.S. Wheat Associates**
www.uswheat.org

The annual quality analysis of soft red winter (SRW) wheat provided information buyers use to determine how to either substitute or blend SRW in flour when U.S. and world stocks of alternate wheat classes were low. Educational seminars using the Wheat Blend Calculator helped buyers write specifications and terms to increase U.S. bids on SRW tenders. The program was used with Nigerian millers, helping to see Nigeria's SRW imports more than 41% higher than last year. In Peru, U.S. Wheat Associates (USW) and one of Peru's largest flour mills organized a hands-on baking seminar showing bakers how to use flour with SRW and hard red winter wheat to yield the same or better dough and bread characteristics they were getting with flour milled from other origins. As of November 1, Peru had imported nearly 3 million bushels of SRW, about double what Peru had imported last year.

Significant progress was made toward establishing a more favorable environment for biotechnological advancements in wheat through a series of more than 20 Crop Quality Seminars around the world. In addition, USW and NAWG have initiated ongoing dialogue with Canadian and Australian wheat industry leaders to identify shared opportunities and challenges associated with biotechnology in wheat variety development.

✓ **National Corn Growers Association**
www.ncga.com

Made possible by close synergies between the Maryland and national organizations, the National Corn Growers Association (NCGA) generates an undeniable force in moving the corn industry toward a golden future. This future includes increased ethanol demand, diverse rural investment opportunities, new choices in biotechnology, a more efficient transportation system, better international market access and much, much more.

Significant staff resources were allotted to the Farm Bill, Energy Bill and Water Resource Development Act so lawmakers had the data necessary for informed and sound decision making. Throughout the bill process, the policy team has secured analysis to determine the impact of proposals on growers.

To ensure demand for distillers grain, the NCGA is engaged in a number of market development activities and closely monitors regulatory developments pertaining to ethanol and coproducts. Developments in trade policy are routinely monitored and action occurs as necessary to protect the interest of growers.

The relationship between NCGA, MGPA and MGPUB has propelled the industry to the forefront of commodity innovation in product development, policy discussion and economic opportunities. The national and state organizations strengthen and complement each other to ensure a prosperous future for corn producers.

✓ **National Barley Growers Association**
www.nationalbarley.org

The National Barley Growers Association (NBGA) was instrumental in supporting an effort to develop an enhanced price policy for crop insurance for specialty barley. NBGA also supported a grass roots effort to amend section 508h of the Agricultural Risk Protection Act (ARPA) to lower the threshold cost of insurance product development and provide a voice for growers in the development process. NBGA continuously monitors farm bill activities through: participation in letters sent to Congressional leadership; serving as a resource to key House and Senate staff to provide barley-related information; providing testimony at regional farm bill forums; and providing input on updating the barley loan rate.

✓ **National Association of Wheat Growers**
www.wheatworld.org

As a grass-roots advocacy organization, the National Association of Wheat Growers (NAWG) works in Washington with its state affiliates on policy issues that affect the lives and operations of wheat growers. Top issues include federal farm policy and the new farm bill; transportation; wheat research; trade; environmental regulations; conservation programs; wheat competitiveness; and biotechnology acceptance. NAWG is also involved in efforts to build a commercialized cellulosic ethanol industry that would benefit wheat producers. In 2007, NAWG concluded years of work to secure disaster assistance for wheat growers and enhanced its capabilities in the research arena by adding a science and technology staff position.

ADVANCING NEW MARKETS

Ethanol Performs
Bunny Burkett
www.bunnyburkett.com

The "Bunny & the Boys Dodge Avenger Funny Car" fueled by ethanol has made notable strides with the use of ethanol on the East Coast.

Fair displays have provided the opportunity to talk with thousands of local drivers, making them aware of the future of ethanol. Along with using the ethanol fueled race car as an attention getter, Bunny & Crew hand out boxes of literature on ethanol and the many uses of grain. The bright orange / yellow MD Grain bags can be seen in the hands of fairgoers as they spend their day at the fairs. Another 100 plus days per year are spent on East Coast highways as the team travels to televised racing events with ethanol logo prominently displayed on the trailer.

Ethanol is America's remarkable, renewable resource and it touches everyone's lives every day. The team makes a positive impact on people, answering frequently asked questions about ethanol blended fuel. They inform them of true facts and help kill the myths about ethanol. They are constantly reminding audiences that ethanol helps reduce America's dependence on foreign oil, and is also environmentally friendly.

Besides their personal goals in promoting ethanol, the Burkett team never misses an opportunity to comment on other uses of corn, including a variety of mass produced plastics, antifreeze, livestock feed, food for a growing world, sweeteners and the fact that new avenues for grain are being developed every day. The end results help increase grain's value at the farm gate.

✓ Management and Selection of Hulless Barley *University of Maryland*

José Costa and Bob Kratochvil continued to investigate the potential of hulless barley as a potential feedstock for fuel ethanol production during 2007. Dr. Costa focused upon agronomic performance evaluations of the two Virginia Polytechnic Institute (VPI) varieties currently available, 'Doyce' and 'Eve' in comparison tests with a number of hulled varieties and elite breeding lines. During 2006-2007, average grain yield at four Maryland locations for the two hulless varieties was only 77% of the average (91 bu/A) for the thirteen hulled varieties tested. 'Doyce' produced significantly better than 'Eve', 76 vs. 65 bu/acre. 'Thoroughbred' was again the best yielding (102 bu/A) variety tested. Continued breeding and selection of hulless barley for the mid-Atlantic will likely close this production gap in the future.

Dr. Kratochvil's research has emphasized a number of management questions for hulless barley (i.e. harvest related seed damage, seeding rate, nitrogen management, planting date, and seeding depth). Replicated studies conducted during 2007 and the three previous years have addressed these management questions. Findings to date are:

For seed production, proper combine adjustment is needed to minimize harvest damage to the germ. Combine cylinder speed should be slower than the rate used for hulled barley. In research trials, seed germination improved over 15 percentage points with a cylinder speed setting of 700 rpm compared to the commonly used setting of about 1000 rpm for hulled barley.

Hulless barley seedlings do not have the same seedling vigor as hulled barley. Following two years of seedling emergence evaluations taken three weeks after planting, 'Doyce' had an emerged seedling population that only averaged approximately 60% of the seedling emergence for 'Thoroughbred'.

It was believed that increasing the seeding rate for hulless barley would partially compensate for its seedling vigor and stand emergence problems. 'Doyce' and 'Thoroughbred' were compared over a range of seeding rates (0.75 to 2.5 million seeds/A) at a total of seven locations during 2005-2007. Yield for 'Doyce' was optimal at 1.75 million seeds/A, the same

rate observed for 'Thoroughbred'. Increasing the seeding rate for hulless barley above this level to compensate for seedling vigor problems is not necessary.

Nitrogen fertilizer requirement for hulled barley has been well documented. However, little was known about hulless barley response to nitrogen. Doyce has been evaluated at one location per year (Wye-2005 and Beltsville-2006 and 2007) to assess its response to a range of nitrogen rates and dates of application. This research has indicated that optimal hulless barley yield may be reached with 100-110 lb N/acre. Tests conducted at additional locations and/or years are necessary to fine-tune these recommendations.

- When no fall nitrogen is used, it is important to supply hulless barley approximately 60 lb N/A at spring greenup (or as soon after March 1 as possible if grown within the MACS cover crop program guidelines). It has also been observed over the three years that an additional 45 lb N/A be supplied as a second spring application when the crop reaches the jointing stage.
- When 20 lb/A nitrogen is used at planting, the best spring greenup response has been with 40 lb N/A followed by a second application of 45 lb N/acre at jointing.

Hulless barley should be planted within a timeframe between the last 10 days of September and mid-October. Because hulless barley seedlings do not have the same seedling vigor of hulled barley, planting during the latter part of October and early November should be avoided.

Hulless barley seed will establish seedlings more easily if planted shallow rather than deep. Two planting depths (0.75" and 1.5") for 'Doyce' were compared at two locations each year during fall 2006 and 2007. Seedling emergence three weeks after planting was nearly 35% better for the shallow treatment. 'Thoroughbred' hulled barley was evaluated at the same two depths and had 15% better seedling emergence at the shallow depth. Shallow seeding of hulless barley still does not allow it to compensate for its lack of seedling vigor as its seedling emergence was only 70% of 'Thoroughbred'.

ADVANCING NEW MARKETS

✓ Development of Hulless Barley as a Value-added Crop *Virginia Polytechnic Institute*

This research is designed to improve the feed value of barley by developing hulless varieties that have a lower concentration of fiber, reduced phytic acid and higher metabolizable energy. This transformation should bring the feed value of barley closer to that of wheat and maize. In addition development of hulless barley varieties having value-added traits, such as hulless seed, waxy endosperm, high or low beta glucan content (depending on end use) and low phytic acid content, will improve marketability of barley as a feed, food and fuel ingredient.

Efforts have been initiated by the Virginia Polytechnic Institute (VPI) breeding program to accelerate development of high yielding, improved and higher quality hulless barley cultivars for use as animal feed, human consumption and domestic fuel ethanol production. In this regard, VPI will continue to deploy a combination of top and backcross breeding methods and evaluate barley lines derived from crosses made between superior hulled cultivars or breeding lines with outstanding hulless lines from the breeding program.

In the 2006-2007 season, twenty elite hulless lines were evaluated in Virginia State Variety Trials. An additional 40 advance hulless lines were also evaluated in cooperating states including Maryland. To date, over 5,000 hulless barley populations have been developed. Forty advanced lines were selected from 64 entries in a 2006 hulless preliminary

test, and 77 lines were selected from 230 entries in a 2006 hulless observation nursery.

Great progress has been made in developing and identifying new hulless lines for potential release. Among 20 hulless entries in Virginia Tech State barley trail conducted at seven locations in 2006-2007, advanced hulless line VA04H-53 ranked 1st in grain yield (69 bu/ac). Additionally, VA03H-61 ranked 3rd (68 bu/ac) and had the highest test weight (60.0 lbs/bu). Eve, one of our elite hulless barley lines, was released in 2007 from the VPI breeding program. Eve is two or more days earlier heading than Doyce and has plump kernels and higher grain protein content. Meanwhile, breeder seed of elite hulless lines VA03H-61 and VA04H-53 were developed and are being considered for potential release.

Thirty two elite hulless lines will be evaluated in 2008 trials. In addition, over 100 advance hulless lines will be evaluated in cooperating states, including Maryland. In 2007-2008, nearly 400 hulless populations will be advanced, and 217 pure lines evaluated in yield tests.

VPI will continue to work with animal and grain nutritionists, and industry personnel to determine the potential of hulless barley as a component for feed, food and fuel ethanol uses and what improvements are needed to make winter barley more acceptable for specific end use markets.

National production of ethanol has tripled to 140 billion gallons in 2007. This represents 5% of the total fuel supply.



✓ E85 Marketing and Infrastructure Development *sesi-online.com*

In 2007, Sustainable Energy Strategies, Inc. (SESI) supported the Maryland Grain Producers Utilization Board (MGPU) in the promotion of E85 in Washington, DC, Virginia and Maryland. SESI estimates that approximately 284,376 gallons of E85 was sold at the stations funded with MGPU support. This is a 15 percent increase compared to last year. SESI was able to raise \$10,000 in support of a billboard campaign and an estimated \$26,000 for the 2008 radio educational campaign. In addition, this grant allowed SESI to complete the advertising billboard and gas card logistics at the Ft. Meade station, which ran in January and February of 2007; apply for and receive an E85 infrastructure grant to upgrade the E85 pump at Ft. Meade; attend local alternative fuels meetings; work with station managers and fuel suppliers to address E85 issues and answer questions; and coordinate with radio stations and potential partners to promote and establish a local E85 advertising campaign.

Ethanol Issue Briefs *Clean Fuels Development Coalition www.cleanfuelsdc.org*

The Clean Fuels Development Coalition (CFDC) recently added *The Impact of Ethanol Production on Food, Feed and Fuel* to its Issue Brief series produced by the Ethanol Across America education program. It is the fourth installment of these Issue Briefs which are used to provide policy makers, media, students, and all interested parties with timely, accurate information on current issues associated with the production of ethanol.

This brief was particularly timely since the increase in ethanol production across the country has raised great concern in many sectors as to the impact on food and feed prices resulting from increased demand of agricultural products.

The Issue Brief makes an excellent case as to the real impacts of this increase in demand and while grain prices have indeed increased, which is good news for Maryland farmers and one of the objectives of the ethanol program, it has not translated to any significant increase in food prices to consumers. The Issue Brief makes the case that agricultural resources can be utilized to produce food, feed, and fuel without adversely affecting any of those categories.

This particular brief, given the timeliness of the issue, received national attention as it was widely covered by media and received positive reviews. As Maryland continues to develop its own ethanol plants, this kind of information assuring the public that there will be no adverse affects on consumer prices will remain an important tool.

Mark your Calendars!

**Thursday,
July 24, 2008**



**Queen Anne's
4-H Park**

FOR INFORMATION CONTACT:

Maryland Grain Producers Association, 53 Slama Road, Edgewater, MD 21037
Tel: 410-956-5771, Fax: 410-956-0161, Email: lynnehoot@aol.com

The Maryland Grain Producers Association and Maryland Soybean Board would like to thank the following sponsors of the 2007 Commodity Classic:

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