

'I doubt other board chairs go through this'

Dr. Bill Kenworthy finds interesting challenges from his many roles

It was Dec. 16, nine days before Christmas and he hadn't yet finished combining his soybean test plots. Dr. William Kenworthy was in his College Park office. He is chairman the Department of Plant Sciences and Landscape Architecture at the University of Maryland's College of Agriculture and Natural Resources.

He is also the university's Extension soybean breeder.

As he often has to do, he was deciding how to divide his time between those two demanding responsibilities over the next day or two.

A hard freeze was beginning to settle in and Kenworthy, having worked in his office that morning, decided to close that shop in the afternoon, go to the Wye research farm, pick up his plot combine, drive to the Poplar Hill research farm in Salisbury, spend the night and begin, at the crack of dawn, harvesting his remaining soybean test plots on the Lower Shore.

If the freeze holds, he decided, and if the ground continues to support the combine without either getting stuck or cutting deep ruts in the field, he'd come back to the Wye where, he said, he has "three or four more days" of combining to finish up for the year.

It had been that kind of a year. He'd been stuck a couple of times already, mostly while working by himself.

He had also had to deal with a pair of amorous skunks. More of that later.

But for what soybeans are already in the bin, it's been an interesting year. For only the second time in his many years of tenure at the university and his conduct of the soybean variety test plots,

the average yields at the Quantico research station were over 70 bushels an acre in two maturity groups. They went over 60 bushels an acre once at Keedysville and the Wye and twice at Clarksville over the range of three maturity groups.

Reporting to the board of the Maryland Crop Improvement Association at an early December meeting, Kenworthy said the frequent spring rains delayed planting. He put his first seed in the ground on May 20 and was still planting in mid-June and later.

It was the double crop beans that were still out in the field at that reporting.

"But despite all of that," Kenworthy said, "the yields have been very good."

One evening, Kenworthy was returning to the field to get his truck. It was getting dark, he said, but he saw this animal running straight at him.

"It was a skunk," he said. He stopped.

The skunk ducked into a ditch. Kenworthy waited. The ditch was between him and his truck. The skunk was in there somewhere.

Then Kenworthy saw another animal running towards him, another skunk. A much larger skunk, he said.

The smaller skunk – obviously the female – ran out of the ditch and into a patch soybeans uncut along the border of the field. She was obviously playing hard to get.

The extra large skunk, by Kenworthy's description, would have none of it. He joined her there.

He could not see them, but he assumed they were at that point more interested in each other than in him.

He took off running across the field and the ditch and safety reached his truck.

"I doubt," he said, "whether other department chairs can claim the same adventures."

Checkoff board funds research

Responding to what is believed to be a record number of requests for funding soybean research projects, the Maryland Soybean Board (MSB), for the fiscal year 2009-10, has approved checkoff grants for 16 projects totaling \$143,638.

Approved projects cover a broad spectrum of studies ranging from variety evaluation and development to weed, pest and disease management to health food development.

The funding is available under a self-assessment program, approved by Congress in 1990, under which soybean farmers contribute, or "check off," 50 cents of every \$100 they get for their beans at the first point of sale.

The checkoff funds are collected and administered by the state Soybean Board.

The above-average prices that farmers received for their crop in the 2008 growing season thus created an above-average checkoff "kitty," which in turn, allowed MSB to help support the record number of research requests this year.

Here's a summary review of the funding:

- \$11,050 to Dr. Robert Kratochvil, University of Maryland Extension grain and oil crop specialist, to continue a two-year evaluation of the effect, if any, of soybean maturity on the nitrogen availability in the soil for a following small grain crop.

In the first two years of the project, he reported, earlier maturity group beans "had significantly more nitrogen present in the surface six inches of the soil" than later maturities and, based on

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Soybean Checkoff News & Notes

Farm energy audits, incentives offered

Soy export market continues trend higher

Even though fall harvest was delayed in many parts of the country, the 2008/09 marketing year for U.S. soy exports showed no signs of slowing down the continuing trend of year-after-year growth. With more than 1.56 billion bushels of U.S. soy exported, soy remains the leading U.S. agriculture export valued at \$15 billion.

Of the 2008/09 soybean crop, the U.S. exported 55 percent, including 1.24 billion bushels of whole soybeans. The U.S. exported nearly 320 million bushels of U.S. soybean meal, and exports of U.S. soybean oil totaled nearly 900,000 metric tons.

"The checkoff funds programs to help increase the demand and preference for U.S. soybeans around the world," said Jim Call, soybean farmer from Madison, Minn., and United Soybean Board (USB) International Marketing chair. "And, despite the worldwide economic situation, U.S. sales of soy internationally have increased."

For the 2008/09 marketing year, China remained the top importer of U.S. soybeans with a total of 686 million bushels or 23 percent of total U.S. soybeans.

The United States' southern neighbor, Mexico, imported the most U.S. soybean meal at 56 million bushels and the second-highest amount of U.S. soybeans with 113 million bushels and U.S. soybean oil with 110,600 metric tons. Total Mexico imports of U.S. soy equaled over \$1.6 billion.

India imported the most U.S. soybean oil, totaling 172,600 metric tons. U.S. soybean exports to Japan dropped slightly at 88 million bushels. The European Union remained a strong market as the Netherlands imported 32 million bushels and Germany imported 25 million bushels.

The slow harvest poses some concerns for the 2009/10 marketing year. With the U.S. harvest moved back, this crop will be coming on the market later than usual. This could upset the opportunity for U.S. soy in the winter months.

Further disrupting the possible success of the 2009/10 marketing year is the likely possibility that the South American harvest could be earlier and larger than last year. Part of the increase in 2008/09 exports resulted from a drought in Argentina that left a gap for soybeans on the international market that the United States continues to fill.

Bioheat users may claim income tax credit

The State of Maryland offers an income tax credit to anyone with a Maryland tax liability for their purchase of Bioheat fuel.

In 2007, the Maryland legislature passed a Bioheat fuel tax credit. The statute provides for a 3-cent per gallon tax credit, up to \$500 for individuals and corporations that purchase Bioheat fuel for the purpose of space and water heating. The statute defines Bioheat fuel as at least five percent biodiesel.

The deadline to apply for the credit for 2009 is March 31, 2010. For more information and an application, visit: www.energy.maryland.gov.



New uses of soy expand market

Soy candles such as this one, made by the Hayden Candle Company of Pennsylvania, are common today, thanks to efforts by the soybean checkoff to develop new uses for beans. In 2008, 28 new soy-based products came to market. That list has grown steadily since 2005, when 19 new products were commercialized. For more information, visit www.soynewuses.org.

The Maryland Statewide Farm Energy Audit Program is a new program based on a successful program run originally for Maryland's Eastern Shore and western counties.

The program helps farmers reduce their energy costs through farm energy audits and incentives for qualifying energy savings projects. It is funded by the Maryland Energy Administration.

A farm energy audit collects and analyzes data about your farm's energy use and recommends actions to increase the farm's energy efficiency.

Agricultural producers in Maryland are eligible for this program, which is offered on a first-come, first-served basis. Farmers are charged \$300 for an energy audit, which will be refunded if one or more of the recommendations from the energy audit is implemented.

Audits involve phone and site visits to collect data and subsequent analysis and research by the audit company. A customized report is generated that will provide information about energy use and savings potential.

Incentives are available to all Maryland producers who install any qualifying piece of energy efficient equipment. Producers do not need to have an energy audit completed in order to apply for this program.

The program will have incentives available per kilowatt hour of electricity that is saved for qualifying lighting and other eligible electric projects; and a per-gallon incentive for propane saved for eligible propane projects. The incentives cannot exceed 50 percent of the total project cost.

For more information, contact Corey Conant with EnSave at (800) 732-1399 or coreyc@ensave.com.

Additionally, the Maryland Agricultural and Resource-based Industry Development Corporation (MARBIDCO) has low-interest loans available. Contact Steve McHenry at (410) 267-6807 or smchenry@marbidco.org.

Grants and loans are available through the Rural Energy for America Program (REAP). Contact Bruce Weaver, State Energy Coordinator with USDA Rural Development at (302) 857-3625 or bruce.weaver@de.usda.gov.

(Editor's Note: Portions of this article are reprinted with permission from Delmarva Poultry Industry, Inc.)

New checkoff-sponsored booklet details the life and adventures of “Glycine Max”

Just the beginning ...

He prefers that you call him *Max*, short for the soybean’s scientific name *Glycine Max*. The cute, animated bean of a boy is the star of a 12-page educational and activity booklet recently published by the Maryland Soybean Board, and he hopes to teach Maryland’s elementary-aged students a few things about the important role soybeans play in our lives.

With a goal to build awareness around agriculture education through the life of a soybean, the Maryland Soybean Board has produced 30,000 copies of this new educational booklet, titled *Just the beginning-The life of a young sprout*. The booklets, which are geared to fourth through sixth grade students, are currently available free of charge and upon request to educators throughout Maryland. Since September 1, 2009, more than 15,000 booklets have been supplied to 12 agencies and organizations across the state.

Marketing efforts promoting the booklet are targeted to agricultural education organizations, including the Maryland Agricultural Education Foundation (MAEF) and various Maryland Extension county offices that have programs appealing to Maryland’s fourth through sixth graders. A direct mail campaign was launched to 4-H educators in each county’s Maryland Extension office in October 2009.

MAEF educators are including the booklet in three Mobile Science Labs that reach students throughout the state. MAEF is using the booklet in its city/urban outreach programs to teach inner city children about the many uses of soybeans as well. For many years, several of MAEF’s Mobile Science Labs have introduced students to the many ways soybeans are present in everyday lives. Students have experimented with soy based and petroleum based crayons, made lip balm from soybean oil and beeswax, planted soybeans in plaster of Paris, and made glue from isolated soy protein. The Maryland Soybean Board’s booklet is being shared with any students that conduct one of the experiments on the Mobile Lab using soybeans. Jeanne Mueller, MAEF’s direc-

tor of elementary education, is encouraged by early responses to the booklet. “Hopefully, *Glycine Max* will not only further educate the students regarding the versatility of the soybean, but also their parents.”

The engaging and informational booklet is published with funds provided by the national soybean checkoff program. Agri-Media Services and Laser Letters, both of Easton, Md., are credited for the creation of the *Glycine Max*® character and the booklet’s design. The booklet includes information about the history of the soybean, how and where it grows, how it’s utilized and what foods and products include soybeans. Readers keep engaged with activities that include a crossword puzzle, word search, coloring page and a “Shake-It-Up” soy ice cream recipe. “*Glycine Max* has a powerful story to tell,” said Bruce Hotchkiss of Agri-Media Services. “He plants the seed in children’s minds of the importance of soybeans in our lives, and the value they hold to each of us as consumers.”

A limited supply of booklets are still available free of charge to Maryland educators working

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with fourth through sixth grade students. For more information, contact Tracey Munson at 410-924-7265 or email traceymunson@goeaston.net.



Soybean checkoff board funds research ...

Continued from Page 1

yield, the wheat did not appear to benefit from an additional 30 pounds of N applied at planting.

As part of this continuing study, Kratochvil will evaluate the possibility of using a Pre-Sidedress Nitrate Test (PSNT) kit used for corn to measure residual nitrate left by soybean crops.

- \$3,500, also to Dr. Kratochvil, for a study responding to Maryland's cover crop incentive program. He is seeking answers to two questions: Does the cereal cover crop species make a difference in the performance of a succeeding full-season soybean crop and does the spring kill date of the cover crop influence soybean performance? The agronomist contends that previous studies have focused not on the soybean performance but on the performance of the cover crop.

- \$16,850 to Dr. William Kenworthy, University of Maryland soybean breeder, to continue his annual variety trials at research facilities on both sides of the Bay. At the request of the board members, he will continue to evaluate the performance of Group 2 varieties although to date he has not seen a yield advantage when grown double-cropped or when planted in late May although rainfall patterns may have skewed the results.

Also, Dr. Kenworthy will reduce his effort to develop cyst nematode varieties because, he said, commercial interest has waned and the deer at Pemberton Park near Salisbury where his cyst nematode research has been concentrated have become so populated that "I cannot get adequate growth and yield on the test plots."

However, he noted, he will continue "my most promising oil and protein lines in national, regional and state evaluations."

- \$10,500 for a total of three projects to Dr. Ronald Ritter, University of Maryland Extension weed control specialist. Ritter will explore weed management programs utilizing Liberty Link soybeans; will evaluate which is better, post-emergence, pre-emergence or pre-emergence followed by post-emergence in a Roundup Ready planting system; and will launch a planned three-year study of the management of glyphosate-resistant weeds in soybeans.

The research on the first two projects will complete three years of studies of

each.

- \$25,840 for a total of four projects to Schillinger Seed Inc. which maintains a major research facility at Queenstown, Md. The studies will continue development of soybean varieties, adapted to Delmarva and southeast Pennsylvania, suitable for inclusion in swine and poultry feed; will involve planting 100-plus soybean varieties and lines in fields with high salt content to seek genotypes for drought tolerance; will "use molecular markers to enable and accelerate the development of new and unique soybean varieties adapted to Delmarva and southeast Pennsylvania, for food and feed markets"; and will continue the company's efforts to develop varieties with resistance to Asian soybean rust.

In that regard, Schillinger will yield test maturity Group IV and V resistant lines in two locations on Delmarva and also in Arkansas and Mississippi where rust was reported in previous seasons.

- \$7,000 to Dr. Arv Grybauskas, University of Maryland Extension plant pathologist, to continue the operation of Maryland's soybean rust sentinel-plot monitoring system. Grybauskas has established five sentinel plot locations in the state.

They are scouted and sampled every other week from emergence to flowering and scouted and sampled every week from flowering to maturity. Delmarva has yet to experience a significant rust outbreak.

- \$24,000 to Dr. Lucy Yu of the University of Maryland Department of Nutrition and Food Science, to continue her research with low-linolenic soybeans in hopes of developing all-natural nutraceutical and functional food products. Her goal, Dr. Yu said, is "to promote the production and consumption of value-added Maryland-grown soybeans with demonstrated potential to prevent disease and promote human health."

- \$6,042 to Dr. Galen Dively, now retired University of Maryland Extension entomologist but still at it and teamed up with successor Dr. Cerutti Hooks, to survey the incidence and infestation levels of the brown marmorated stink bugs in Maryland soybean fields and develop resources and information for Extension agents, growers and crop advisors on how to identify and control the pest.

The bug, relatively new to North America and first discovered in Allen-

town, Pa., in 2001, is now established in Maryland and may have greater potential for soybean crop damage than the native species, Dively said.

- \$14,856 to Dr. David Gruner, University Maryland entomologist, to survey and assess the pests which live underground in tilled and untilled soybean fields and explore how another underground insect, the entomopathogenic nematode (EPN) — the "killer" nematode — may offer biological control of the pests. Gruner will use both university research farms and private farms and hopes to gather sufficient preliminary data "to allow the design of an experimental framework intended to manage soils to promote the long-term persistence of EPN and their biological control services."

- \$15,000 to entomologist Dr. Cerruti Hooks to evaluate "the impact of Italian rye grass on above and below-ground organisms inhabiting soybean fields. Dr. Hooks says the results from several greenhouse studies indicate that Italian rye grass "can significantly reduce soybean cyst nematode populations" and he intends to transfer that research to the field. Indications are that Italian rye grass tends to starve the nematodes and decrease their parasitism.

- \$9,000 to Dr. Y. Martin Lo of the University of Maryland Department of Nutrition and Food Science, for a three-part study to "strengthen the competitiveness of Delmarva soybeans through development of value-added applications."

Specifically, Dr. Lo seeks to identify and characterize the quality attributes of Delmarva soybeans to make them able to compete with beans from Canada and the Midwest in the production of tofu and soymilk.

He also wants to develop a "natural product" using okara, which is the waste product left from ground soybeans after extraction of the water fraction used to produce soymilk and tofu. Dr. Lo contends that the large quantities of okara produced annually pose a significant disposal problem and that it is possible it could provide a suitable dietary additive in biscuits and snacks because it reduces caloric intake and increases dietary fiber.

Finally, Dr. Lo proposes to assess the market potential of any products that may emerge and analyze their consumer acceptance.

Research Reports

Editor's Note: The Maryland Soybean Board is tasked with three main mission areas — research, marketing and education. Each year, a Request for Proposals is held to find qualified research projects that address issues that are relevant and pertinent to Maryland soybean growers. MSB's Research Committee developed, and updates, a Research Priority List to guide their decisions. That list is available at www.mdsoy.org. The following reports provide an update on checkoff-sponsored research.

Better Beans: Maryland lines move forward

The search for the “better bean” goes on. Along with colleagues at other land grant universities, Dr. William Kenworthy continues his painstaking research to develop soybean varieties that combine any number of desirable traits without sacrificing yield.

For the 2008-09 crop year, the oil breeding objective was to incorporate all three of the oil traits — low saturates, mid-oleic acid, and/or low linolenic acid — into one line.

However, Kenworthy noted, lines with low linolenic acid have been yielding the highest and six Maryland lines with this trait were advanced to national tests in 2008. “Md 04-5217 remains our best yielding line with 3 percent linolenic acid,” Kenworthy reported to the Maryland Soybean Board which contributes to the funding support for the project.

“Its two year average yield in the national maturity group IV Quality Traits

test is 90 percent of the average yield of the standard varieties in the test. Its yield in the Maryland state variety tests in 2008 ranged from 85 to 100 percent of the average yield in the standard varieties in the test.”

Other low linolenic acid Maryland lines that performed well in the 2009 Maryland state variety tests were Md 05-5633, Md 05-5693, and Md 06-5700.

These lines had yields which ranged from 83 to 114 percent of the yields of the standard varieties in the test. All of these lines continued to be evaluated in 2009.

Kenworthy noted further that more productive Maryland lines with the low phytate trait and/or with higher protein have been advanced to national yield tests and four Maryland lines having both low linolenic acid and low phytate were in Maryland yield tests for the first time in 2008.



Soy research shows value in ‘functional foods’

Dr. Lucy Lu of the University of Maryland Department of Nutrition and Food Science is exploring the potential of using low-linolenic and low saturated fat soybeans in nutraceutical and functional foods.

She reported to the Maryland Soybean Board, which is supporting her work, that her team is awaiting a statistical analysis of some of the data from her studies of low-linolenic beans and that “we are continuing our efforts to develop health promotion functional foods.

“Our group,” she said, “has developed an all-purpose baking mix made with one-third soy flour. We have successfully used it to prepare pancakes, biscuits, muffins, cakes, cornbread and

pot pie topping.”

However, in another phase of her work, Dr Lu is studying yellow, green, brown and black seed-coated beans for their antioxidant properties and anti-proliferative activity against HT-29 human colon cancer cells.

She filed this report: “Of particular interest in the colored soybean study was the response of HT-29 human colon cancer cells to treatment with extracts of the various colored-seed coat soybeans.

“Cancer cell growth was inhibited by all of the extracts except that of the green seed coat soybean. Also, the extracts inhibited cancer cell growth more than equivalent concentrations of antioxidants isoflavone standards, indicat-

ing that growth inhibition may be enhanced by some other compound in the soybean extract.”

An abstract on this portion of the project was submitted for presentation at the 2009 annual meeting of the Institute of Food Technologists.

In late summer of '09, Dr. Lu, in an interim report to the Soybean Board, said that her food product development work had an “exciting” summer.

“We have enlisted the help of a professional chef working toward his food science degree,” she wrote. “He has developed a healthy yet delicious recipe for soy and whole wheat crackers appropriate for bakeries or small businesses. Also a recipe for soy and whole wheat pasta is on its way.”

For more information about the Maryland Soybean Board and its soybean-checkoff funded projects, please visit the board's website at www.mdsoy.org.

Weighing the economic benefits

Grybauskas evaluates Headline as a 'plant health promoter' versus 'disease controller'

Headline, a strobilurin fungicide, has been reported to occasionally affect soybean and other crop yields in the absence of significant disease pressure.

This occurs approximately 40 percent of the time regardless of disease pressure.

Nevertheless, according to Dr. Arv Grybauskas, University of Maryland plant pathologist, the registrant, BASF, has recently received approval for a change in the federal label asserting that plant health effects as well as disease control may be observed with the use of this product.

"This legalizes the use of this pesticide even if no pest is the direct target of the application, and encourages the routine use of the product," Grybauskas informed the Maryland Soybean Board.

Previously pesticides by law could only be applied if a pest specifically identified on the label was present in the field or at least an outbreak of such a pest was expected, Grybauskas said.

Then the question arises, he said: Do the potential benefits of this product occur frequently enough to be used routinely regardless of disease potential? Since response is often associated with dose, the field experiments were designed to examine the performance of soybeans after a one-time treatment with a range of rates of Headline up to the maximum label rate (12 fl oz/A) in comparison to plants treated with Folicur (a triazole fungicide) and untreated plants.

It was hypothesized that the field level plant response to the typical application rate of 6 fl oz/A might be at the limit of detection.

"Testing a range of rates should provide a better means of detecting a response and provide an estimate of prob-

ability of getting a return at different rates," Grybauskas said.

Field trials were been established at the Western Maryland Research and Education Center near Keedysville and the Wye Research and Education Center near Queenstown.

Both trials were designed with and without drip-irrigation to provide a range of non-disease stress environments.

The results will be analyzed using standard statistical approaches and a risk analysis approach. Fungicide applications were slated to be made in August at the R3 stage of crop development, which is when pods begin to form in the upper nodes of the plant.

Data will be collected on leaf area development, photosynthetic efficiency, diseases development, yield and yield components. Standard data analysis and risk analysis will be performed. The risk analysis method is commonly used in business and provides an estimate of the probability of a return.

Soy 'nitrogen credit' may vary by maturity group

The research question is, do soybeans leave a "nitrogen credit" in the soil for the following small grain crop? And, if so is there any connection between the maturity of the soybean variety and that nitrogen contribution?

Dr. Robert Kratochvil, University of Maryland Extension grain and oil crop specialist, has been exploring those agronomic questions.

"It is believed," Kratochvil noted, "that an earlier maturing (MG 2-3.5) soybean variety may contribute more nitrogen to wheat during the fall growing season than a later maturing soybean variety (MG 3.5-4.5)."

The study was established during the fall 2007 by planting wheat into the full season soybean maturity plots that were used during 2007 to assess soybean maturity as a strategy to manage Asian soybean rust.

The wheat was planted following harvest of the full season soybean study at Wye Research and Education Center and harvest of the double crop soybean study at Central Maryland Research and Education Center in Beltsville.

How did the soybeans fare? Where full season soybeans were grown, Kratochvil reported, fall soil samples in-

dicated that earlier varieties had greater concentrations of soil nitrate in the top six-inches than later maturing varieties.

"And for the one double crop site, there was a trend for increasing soil nitrate concentration as soybean maturity decreased but the differences were not great enough to be statistically different," he added. "This outcome indicated that more fall mineralization of nitrogen from soybean residue can occur the earlier a soybean variety matures."

And what about the wheat? For the wheat planted after full season soy-

beans at the Wye, there was no yield benefit attained following any of the soybean maturity groups when fall nitrogen was used at wheat planting.

The wheat yield results were more variable at Beltsville following double crop soybean, but again there was no statistical difference observed between using and not using fall nitrogen following any of the soybean maturity groups.

The study was continued into the 2009 crop year. Because of the weather-delayed harvest, results of the 2009 studies were not immediately available.

Italian ryegrass: What is the impact?

Italian ryegrass is one of the fastest growing grasses available to farmers. It establishes well, has early spring growth, rapid re-growth after cutting, and offers good digestibility. Because it thrives in all kinds of soils, it is used extensively for conservation purposes and often in mixtures with red clover. New varieties have good persistence, and can be used for two to three years in mild climates.

The grass is featured in a current research project headed by University of Maryland entomologist Dr. Cerruti Hooks. The project, supported by the Maryland Soybean Board is entitled "Impact of Italian ryegrass on above and below ground organisms inhabiting soybean fields."

The main goal is to explore the ability of Italian ryegrass to reduce populations of soybean cyst nematodes and lesion nematodes and improve soil health. The research team also wants to see if an Italian rye cover crop has any influence on arthropods in the plant canopy. In the course of the study, Hooks and his team will quantify the impact of the Italian rye on soybean productivity and marketable yields.

Herbicide resistant marestail meets its match

The weed known as marestail had been shedding the glyphosate herbicides like water off a duck's back for several years.

For Dr. Ron Ritter, the University of Maryland's veteran weed control specialist, that has been a challenge he could not resist.

Thus, for the 2008-09 crop year, he conducted a study at the Wye Research and Extension Center which involved the use of Liberty-Link soybeans.

Through 2008, the herbicide trade name, Liberty, was recognized as the product of choice to be utilized over the top of Liberty-Link crops.

Starting in 2009, the trade name Liberty was replaced by Ignite 280.

Ignite 280 was the product tested in 2008.

Here's Ritter's report to the board:

"Preplant and postemergence applications were made. It was shown that 22 ounces per acre of Ignite 280 successfully controlled glyphosate-resistant marestail. Tank-mix combinations were tested, but Ignite 280 alone was sufficient to control the marestail.

"A preplant application of Ignite 280

followed by an in-crop application provided season-long marestail control," Ritter reported. "The Liberty-Link soybeans appear to be very tolerant to Ignite 280. A 2X application did not injure the soybeans."

Ritter also took a look at another new herbicide called Sharpen, from BASF.

"We applied it at three different rates both preplant and pre-emergence," he reported, "and it provided close of 100 percent control of the marestail plants."

Lambsquarter study exposes varying resistance

In a related study, Ritter explored — and confirmed — the emerging resistance of common lambsquarter to glyphosate in full-season, no-till soybeans.

Greenhouse studies during the winter of 2007/2008 looked into the survival of common lambsquarter when glyphosate was applied to them. Interestingly, he reported, it was once again shown that seed collected from three different sites had various levels of glyphosate resistance.

Seeds were germinated in the greenhouse, located on the campus of the University of Maryland. When the plants were about 2 to 4 inches in height, glyphosate was applied at a 1X, 2X and 4X use rate.

After four weeks, Ritter said, most common lambsquarters plants sprayed with the 1X use rate of glyphosate were alive. However, plants sprayed with the 2X use rate saw survival of some plants, but not all at all three sites. Plants sprayed with the 4X use rate, saw only one location where plants survived.

One of the locations where seed were collected was the Wye and in the summer of 2008, full-season no-till soybeans were planted at this site.

A variety of preemergence and postemergence programs were examined. Where glyphosate at a 1X use rate was applied preemergence and postemergence, the common lambsquarter survived. A variety of tank-mix combinations applied with glyphosate preemergence, did provide adequate knock-down of emerged plants and enough residual control to provide season-long control, the weed control specialist said.

Study looks at reduced tillage, poultry litter connection

Dr. Josh McGrath, University of Maryland agronomist, is continuing a study launched by his predecessor Dr. Frank Coale, exploring the possibility that poultry litter can be successfully incorporated in reduced tillage grain production without excessive nitrogen and phosphorous losses in surface runoff and ammonia emissions into the atmosphere.

It is keyed to an elaborately designed field site at the Wye Research and Education Center but also involves 12 field locations across Delmarva.

At the end of the first two years of the study McGrath's report to the board carried this summary conclusion:

"The dry conditions at (the Wye) in summer 2007 and 2008 severely limit the conclusions that can be drawn from runoff data in those two years. However, tissue and soil samples collected will be used to estimate nutrient use efficiencies associated with each tillage practice. In addition, they will allow a precise assessment of the potential environmental impact associated with each tillage practice.

"One must use extreme caution in drawing final conclusions based on the currently incomplete dataset.

"Nonetheless, tillage appears to reduce the potential for phosphorus losses in runoff.

"It is anticipated that incorporating

manure will decrease volatilization and conserve nitrogen for crop use. Based on the 2006 data, it appears that even minimal tillage can curb nutrient losses in runoff while maintaining the benefits of no-till and without significantly increasing sediment losses."

Lo examines value-added applications

Dr. Y. Martin Lo, a food and nutrition scientist in the University of Maryland's Department of Agriculture and Natural Resources, in exploring value-added applications of Maryland soybeans, has been looking into the possibility of using them in the making of soymilk and tofu.

He reported that in general the beans grown on Delmarva are smaller in size, have a darker hilum and contain less crude protein when compared with Canadian soybeans, which have been widely used by major soymilk and tofu manufacturers. The tofu made with Delmarva beans using the conventional method "was found to carry a light yellow tone with a firmer texture, unlike the commercially available products that are generally white in color and a bit on the soft side and less brittle," he said.

Critical areas in the production process include the amount of time the soybeans are soaked, stirring speed, amount of calcium sulfate used to curb the mixture and even the method of adding the calcium sulfate and the temperature of the mixture. Nonetheless, Dr. Lo remained optimistic. "The project," he told the board, "is progressing as planned," adding that "we are exploring additional applications using Delmarva soybeans."

Brown marmorated stink bug draws attention

Dr. Galen Dively, long-time University of Maryland entomologist, has retired from the classroom but not from the field.

Continuing his exploration of the pests which pester Maryland farmers, he has been engaged, with the support of the Maryland Soybean Board, in assessing what damage, if any, stinkbugs do to soybean fields here.

To date, he reported at the end of the 2008 crop year, the third year of the study, stink bug populations in the Mid-Atlantic states have been most abundant in the soybean fields during later pod filling stages (R6 and R7). "So the key question is whether feeding injury at these later growth stages has any impact on yield or seed quality," he said.

This was his conclusion to a detailed three-page report: "Collectively, these results, combined with the previous two years of studies, provide convincing evidence that the impacts of stink bug feeding on soybeans at these later growth stages is minimal. Also, it is noted that the experimental infestation density of one stinkbug per roughly foot of row rarely occurs on soybeans in the Mid-Atlantic states."

Maryland soybean farmers have a new bug to worry about. It's called the Brown Marmorated Stink Bug and has drawn the attention of Dr. Galen Dively.

Dively, now retired but continuing some field research for the University of Maryland College of Agriculture and Natural Resources, is surveying the potential impact of the pest on soybean production in the state.

Dively, who noted the stink bug was only recently introduced here, reported that he and colleagues had surveyed eight randomly selected soybean fields in each county except in southern Maryland and the lower Eastern Shore.

"Highest infestations were found in Washington County," he reported, "where every field was infested and the highest recorded density was 22 stinkbugs per 100 sweeps. Plant and pod injury was visually evident in soybean and fruit crops at the Western Maryland Research and Education Center."

The surveys indicated, however, that the stink bug has not yet invaded areas south of Cecil County or south of Prince Georges County.

"Caged soybean plants, infested manually with varying densities of stink bugs, have been harvested and are being processed for bean weights, incidence of seed diseases, and other yield parameters" Dively said. "These data should show if this new stink bug can potentially impact soybean production."



A new type of stink bug is causing concern in the Mid-Atlantic. Researchers are looking at the potential impact of the brown marmorated stink bug, which can be difficult to control, on soybeans. Photo courtesy Deepak Matadha, Dept. of Entomology, Rutgers.

National News Briefs

Study Confirms Soybean Checkoff Benefits Entire Industry

Independent Analysis Shows U.S. Soybean Farmers Getting Big Return on Checkoff Investment

The United Soybean Board (USB) has released the results of its independent return-on-investment (ROI) study, which was conducted by Dr. Gary Williams, director of the Texas Agribusiness Market Research Center at Texas A&M University. The study found that the soybean checkoff has returned \$6.40 in additional profits to U.S. soybean farmers for every dollar invested.

"The ROI study is very helpful as it shows the soybean checkoff is working," says Jim Stillman, USB Audit and Evaluation Chair and a soybean farmer from Emmetsburg, Iowa. "We are investing dollars and getting a \$6.40 return for every one we invest."

Mandated by the Federal Agriculture Improvement and Reform Act of 1996

the study is conducted every five years.

Release of Mapped Soybean Genome Offers Endless Future Opportunities for Farmers

Supported by the soybean checkoff, the Joint Genome Institute (JGI) has unveiled a complete draft assembly of the sequenced soybean genome.

With the help of genomics tools that were developed in soybean checkoff-funded projects, the project began in January 2006. Release of the soybean genome sequence offers researchers and soybean breeders access to genetic tools and will help speed up the process of finding additional solutions to yield-robbing pests and diseases and to improve compositional quality. Researchers at JGI hail the breakthrough's potential effect on the soy biodiesel industry in particular, but also its value for soybean research in general. Future endeavors could include work with traits

that improve yield, oil and protein content, and resistance to drought, pests and diseases. The soybean genome has 1 billion nucleotides, or roughly one-third as many as the human genome.

Drought-Tolerant Soybean Line Expected To Be Released Soon

U.S. Department of Agriculture-Agricultural Research Service plant geneticist Tommy Carter and his team of researchers are preparing to release a line of drought-tolerant soybeans. Utilizing checkoff funding, Carter's crew – dubbed Team Drought – has narrowed down an original supply of over 5,000 varieties to five. These varieties display the slow-wilting trait as well as good yield potential under normal rainfall conditions. Following one final round of testing, Carter hopes to release his drought-tolerant lines soon. According to Carter, his slow-wilting lines yield four to eight bushels better.

Leading a 'Non-GMO Revolution'

Schillinger Genetics, formerly Schillinger Seed, is planning to formally introduce a new segment of its expanding business in 2011.

In its commitment to produce high quality soybean seed specifically suited for growth on Delmarva – a commitment supported for several years by the soybean boards of both Maryland and Delaware – the new business segment will focus on new feed varieties for poultry, swine and fish and other sea life.

Meanwhile, according to Bill Rhodes, project manager of the firm's research farm near Queenstown, the work to develop salt-tolerant lines for Delmarva fields which become flooded with brackish waters, and the search for varieties resistant to Asian soybean rust continue.

The company's new molecular lab at the Queenstown farm, which became operational in January 2009, has speeded up the normally painstaking search and identification of traits used in variety development.

All of these Schillinger varieties will be marketed under the eMerge label. The label bears a subhead which reads: "Join the Non-GMO Revolution."

Rhodes, in an interim report to the Maryland Soybean Board last August, said related research focusing on the alteration of soybean composition to meet poultry, swine and aqua feed demands for nutritional improvements "continues to show excellent progress."

He continued: "Over the last three years we have sponsored poultry feed-



Bill Rhodes of Schillinger Genetics, second from left, gives a field tour to Maryland Soybean Board Directors Dave Burrier, Mike Harrison and Sid Richardson during the summer of 2009. Schillinger's eMerge line is expected to launch in 2011.

ing trials at the University of Illinois under the direction of Dr. Carl Parsons — a native of Parsonsburg, Md."

Dr. Parsons' studies have demonstrated that the high protein (58 percent) meal has improved lysine digestibility by 4 percent over standard meal and the true metabolizable energy values were higher in the high protein meal of a standard soybean variety, Rhodes said.

"These results, plus those from the swine and turkey feeding trials have been creating increased interest in our soybean varieties. We are optimistic of having a sizable acreage planted of those varieties in 2010," Rhodes told the board.

He added that "we have received a high level of interest from an aqua nutritionist in our new product offerings with altered composition where we have reduced anti-nutritional content and we are initiating salmon, shrimp and trout feeding trials next winter."

Rhodes said the goal is to have a complete database for Schillinger's new feed varieties completed in fall 2010 and "to launch this new segment of our business in 2011. Our database will include multiple field tests on Delmarva to prove yield, feeding trials on all species mentioned above and the successful combining of improved meals with new oil quality factors."

In soybean breeding, as so often in life, researchers find patience is a virtue

The search for a new seed variety requires a great deal of patience. Take, for example, Schillinger Seed's log of its on-going development of Group 3 and 4 varieties containing low-linolenic oil for both the conventional and Round Ready markets.

The researchers started with 18,000 plants screened for the low linolenic trait. From those, 5,000 were grown in Argentina. Of those, 521 were selected for testing in 2008 and put into yield trials by maturity and tested at three Delmarva locations.

After the yield results were in, 32 lines were selected for advancement.

Eight of those – remember they started with 18,000 — had "excellent performance" and were sent back to

Argentina for planting during our winter months "for a small beginning increase."

"We will retest these lines this year to more thoroughly evaluate their performance," wrote Schillinger's Bill Rhodes and Eric Wright from the company's Queenstown, Md., research farm.

"All of the selected lines have low linolenic levels that are less than 1.5 percent, which puts them in the ultra low category. They are also SCN resistant," the researchers said.

"We continue to make progress with our newer selections and with eight new lines in increase, we feel confident that we can have low linolenic varieties that are highly adapted to the Mid-Atlantic area," Rhodes and Wright concluded.



Maryland bred: John Schillinger, right, founded Schillinger Seed Co., and now leads Schillinger Genetics and a "revolutionary" approach to seed marketing.



Soybean checkoff shines at Md. State Fair

The Maryland State Fair is so full of attractions and distractions that it can sometimes be hard to stand out amid all the competing sights, smells and sounds. And yet, the Maryland Soybean Board found that adding yet another sound to the cacophony was just the ticket to boost booth visits — the clickety-clack of a clicker wheel.

The wheel, purchased in 2009 in cooperation with soybean boards from other states in the region, may be outfitted with different graphics panels according to the message the board wants

to deliver. At the Maryland State Fair, Debra Spurrier, a communications contractor for the soybean board, focused on the benefits of animal agriculture, which is the soybean industry's biggest customer for soybean meal.

The wheel rotates around the Mid-Atlantic with Spurrier, who runs exhibits for the various boards.

Spurrier also coordinated the delivery of soybeans for a children's play bin at the state fair. Director Dave Burrier of the Maryland Soybean Board donated the beans.



The Bean Bin was a popular attraction for the younger set at the Maryland State Fair.

Soy-based dust suppressant used at Great Frederick Fair

As part of its ongoing initiative to promote "green" soy products to the state's network of agricultural fairs and expos, the Maryland Soybean Board sponsored the application of a soy-based dust suppressant known as "DustKill" at the 2009 Great Frederick Fair. The product was applied in the fair's infield area, where traffic from parking often kicks up dust.

Visitors to Ag Progress Days in Pennsylvania the month before may have seen the product in action there, too – the Pennsylvania Soybean Board sponsored a "Dust Free Zone" on the research farm's roads.

The Maryland Soybean Board is continuing to work with fairs and expos this year, encouraging each event to consider the use of soy-based inks in their printing materials and the use of biodiesel blends as substitutes for all-petroleum fuels.

The amusement company for the Montgomery County Fair, Powers Great American Midways, has used biodiesel blends in the generators that power the carnival rides and lights for several years now. Signs on the gates to the rides and announcements read over the public address system let the fair's 500,000 visitors per year know that the fair and midway are choosing greener alternatives. Montgomery County Fair makes a point to request soy ink in its printing.

New soy-based products are being commercialized constantly and offer events and businesses a wealth of choices for many different products. For more information, visit www.soybiobased.org.



Jack Coleman of DustKill in Paradise, Pa., is the owner of the soy-based dust suppressant company. DustKill has many advantages over petroleum and chemical suppressants.

Financial Report

The farmer directors of the Maryland Soybean Board administer the federal soybean checkoff in Maryland. Authorized by Congress in 1990, the federal checkoff assesses one-half of one percent of the net market value of soybeans grown and sold in Maryland for research, market development and producer communication. Half of the overall checkoff assessments are sent to the United Soybean Board for national and international research, marketing and education projects.

The other half, which stays in Maryland, works for you through soybean production research, marketing promotions of biodiesel, SoyInk and other soy products, support for animal agriculture (an overwhelming market for soybean meal), and education on issues such as Asian soybean rust and other important news. The Maryland Soybean Board's executive director is Sandra L. Davis. The board maintains a website at www.mdsoy.org.

Maryland Soybean Board

Fiscal Year 2009 - Oct. 1, 2008 through Sept. 30, 2009

Total FY09 Assessments	\$703,606
50% to United Soybean Board	<u>351,803</u>
Maryland Soybean Board	351,803
Interest & FY08 Project Funding Carryover	265,620
Miscellaneous	<u>5,546</u>
Total Revenues FY09	\$622,969

DISBURSEMENTS

Administration, Collection, Compliance & Board Operating Costs, Elevator Audits	\$55,422
Special Projects	25,819
Producer Communication	43,215
Promotion	50,198
In-State Research	<u>131,877</u>
Total Disbursements FY09	\$306,531

Ongoing Project Funding FY10 \$316,438

What can we do for you?

The Maryland Soybean Board has a variety of ways to help farmers teach others about the value of the soybean industry and the soybean checkoff board. Popular items include the board's placemats for "meet and eat" events, sample packs of soy crayons, and soy nuts.

The board also offers a Speaker's Bureau to help community organizations understand its mission and projects. Various topics are available, including the basics of the soybean checkoff, soy new uses, biodiesel basics and animal agriculture and its importance to the soybean industry. In addition, the board has a video that may be presented.

Speakers and donations of items may be arranged by calling the Sandra Davis at the Maryland Soybean Board office at (410) 742-9500.

Visit us on the web at www.mdsoy.org

Maryland Soybean Board 2008-2009 Directors

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Preston

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Easton

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Caroline County Extension

Mark Powell
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Bruce Roberts
Perdue Farms - Salisbury

Sandra L. Davis
Executive Director

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