

Table of Contents

Production and Conservation

Research Offers
New Insect and
Weed Management
Strategies..... 2-3

Deep-Slot Tillage
& Nematode
Control..... 3-4

Center for Excellence
Highlights New Tillage
and Conservation
Practices..... 5

Protecting the Environ-
ment through Carbon
Management 6

New Use Development

Michigan Corn Har-
vested from the Field
to Discover New Drug
Technologies 7-8

National Research

Leveraging State Power
to Conduct National
Research 8-9

Michigan Represen-
tation on Action
Teams 10

Board of Directors

..... 11

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2005 Research Report

Dear Michigan Corn Producers:

In 1993, corn producers in Michigan established the Corn Marketing Program of Michigan, the state's check-off program, to enhance the market value of corn. In February of 2003, you once again gave the program overwhelming approval and asked us to keep up the good work for five more years.

Through the Corn Marketing Program of Michigan (CMPM), corn producers in Michigan have the opportunity to invest in check-off funded research projects that focus on improving on-farm production practices and also creating new uses for corn. CMPM strives to expand and enhance current markets while at the same time developing new markets.

Over the past ten years, CMPM has funded over 100 projects that have led to improved production and conservation practices, an ethanol industry within the state, and the development of corn-based products for new markets such as ethanol, carpeting, fabrics, packaging materials, salt substitutes and plastics that replace petroleum-based products.

The results of your investments in the industry can be seen through the development of new markets and products, increased educational events for producers and consumers, and significant advances in corn-related research.

The following pages showcase how CMPM has invested some of your check-off funds over the past couple of years. Some of the research cited here are completed projects while others are ongoing. All are designed to help keep the Michigan corn industry on the cutting edge.

If you have any questions or suggestions about the research you fund, please contact the CMPM office at 1-888-323-6601.

Sincerely,

Richard Godfrey, President
Corn Marketing Program of Michigan
Jonesville-Area Corn Producer



Established under 1965 P.A. 232, and voted in by the state's corn producers in 1992, the Corn Marketing Program of Michigan (CMPM) receives one penny per bushel for all field corn grown in Michigan and sold. The "check-off" funding is invested in education, market development, new uses and research. The continuation of the program is voted on by Michigan corn producers every five years. For the program to continue, the referendum vote must be approved by both the majority of voting producers and corn production. The nine-member Board of Directors, appointed by the Governor, sets the yearly direction of the program. Board terms are staggered, and each year three board positions are up for appointment or reappointment. Michigan is divided into nine districts based on corn production, with each board member representing a district.

As a way to dispense research results to the state's corn producers, CMPM publishes an annual Research Report, highlighting current and past check-off funded research projects.



PRODUCTION AND CONSERVATION INVESTMENTS

The Corn Marketing Program of Michigan (CMPM) understands the importance of agronomic research and the role it plays within the agriculture industry. It is with this agronomic research that advancements in technology and production practices are made, which ultimately improves the bottom line for corn producers. CMPM works on behalf of corn producers in Michigan to fund agronomic research looking at tillage practices, pest control, and fertilizer recommendations just to name a few. CMPM strives to stretch the producer penny in order to keep corn production an economically viable industry within the state.

Research Offers New Insect and Weed Management Strategies

During the 2004 growing season, CMPM initiated one project which focused on corn with stacked transgenic herbicide and insect resistance traits. Stacking both traits into a single corn hybrid offers new strategies for pest management in Michigan corn production. These technologies will be aggressively marketed in the near future.

“As more and more of these products come to the market, it is important that we look at the results and efficacy of the stacked trait corn and also the economics of these systems,” said researcher Jim Kells, a leading weed expert at Michigan State University (MSU). Kells thinks transgenic traits will offer corn growers new options for weed and insect management. “Stacking both traits into a single corn hybrid gives producers new and innovative strategies for insect and weed management. We wanted to really explore the economic impact these new strategies could have versus the more conventional types of weed and insect control,” he added.

CMPM treasurer Clark Gerstacker, who also serves as chair of the National Corn Growers Association Research and Business Development Action Team, agrees there is a real need for this type of research. “As growers have the opportunity to utilize new technologies like stacked transgenics to possibly improve production techniques, it is vital that we assess the true economic impact on production costs,” said Gerstacker, a corn producer from Midland.

“As transgenic crops become more and more widely accepted around the world, we have to invest in these types of projects to ensure we continue to be players in the global market.”

Table 1. 2004-2005 Sites Based on Field History		
Locations	Weeds	Corn Rootworm
MSU Campus (Site 1)	Low	Low
MSU Campus (Site 2)	High	Low
St. Johns	Low	High
Mason (04)	High	High

The three-year study (sites shown in Table 1) will examine the economics of managing weeds and corn rootworm through stacked transgenic corn hybrids as compared to conventional insect and weed management strategies. The objectives of the study are to: (1) determine the economic

value of stacked trait corn hybrids by measuring the yield loss incurred from weeds and insects in comparison with conventional strategies, and (2) determine the consistency of conventional and transgenic strategies for control of insects and weeds under a range of Michigan conditions. When completed, this research will determine whether the additional costs of the stacked transgenic traits are

justified under a range of weed and corn rootworm infestations and determine the economic value of these traits for Michigan corn producers.

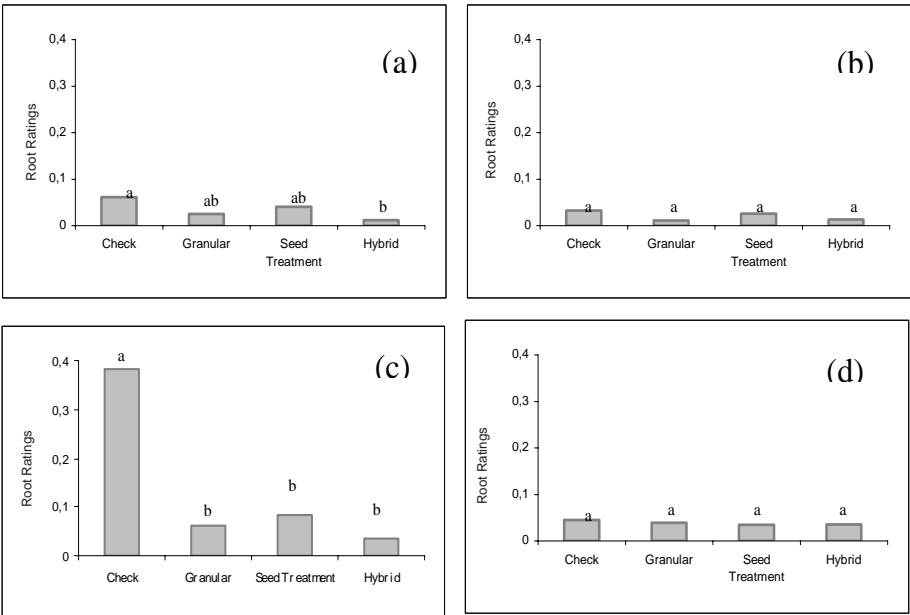


Table 2. Root ratings on a scale of 0 (least damaged) to 3 (highly damaged) for (a) MSU 1, (b) MSU 2, (c) Mason, and St. Johns in 2004 for corn rootworm management strategies. Means with a common letter are not significantly different.



PRODUCTION AND CONSERVATION INVESTMENTS

Field trials were conducted at four locations in both 2004 and 2005 (sites shown in Table 1) and will again be conducted in the 2006 growing season. The sites were chosen based on their weed and insect infestation histories. Locations with different pest infestations were chosen to determine if the resistance traits are economically justified under a range of infestation levels. Near-isogenic corn hybrid lines were used throughout the trials to minimize agronomic differences between the hybrids. Transgenic and conventional weed management strategies involved preemergence and postemergence herbicide applications and herbicide selection based on scouting. Corn rootworm strategies include a resistant hybrid, a conventional soil-applied insecticide, and a seed treatment. Data collected included weed control efficacy, visual assessment of corn rootworm damage, and corn grain yield.

Table 2 shows the 2004 corn rootworm damage. As expected, corn rootworm damage varied by location. Table 3 shows the control of common ragweed, the dominant species for the high weed density sites (MSU 2 and Mason).

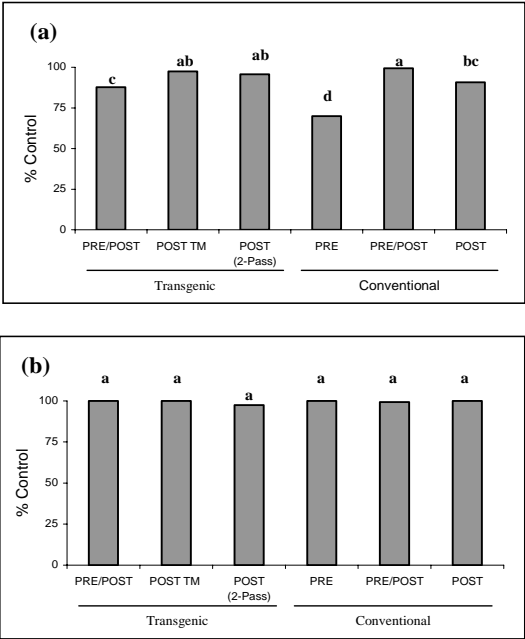


Table 3. Common ragweed control 30 days after mid-post application at (a) MSU 2 and (b) Mason. Means with a common letter are not significantly different.

“The data generated through this research will be the basis of recommendations on the adoption and utilization of these technologies, which should lead to greater production efficiency and profitability,” explained Kells. “This study will provide the information needed to determine those situations in Michigan where stacked resistance traits are economically justified.”

Partnering with the Capitol Area Innovative Farmers on Tillage and Pest Management Strategies

Deep-Slot Tillage

Over the past year, CMPM worked with the Capital Area Innovative Farmers (CAIF), a non-profit organization formed by farmers in the Lansing area, on two agronomic research studies. The first project looked at using innovative tillage practices in order to increase corn profitability. Throughout the Midwest, several farmers have demonstrated that corn yields can be increased by using alternative tillage practices to penetrate compacted soil. The usage of deep slot tillage has been proven to decrease soil bulk density, however, CAIF along with CMPM decided to take that research one step further and examine the effects of the deep-slot tillage on corn rooting systems, soil water movement and storage, as well as nutrient uptake.

Three on-farm trials were established in Eaton and Ingham counties in order to compare corn yield on deep slot tillage areas as compared to traditional tillage systems. Leaves and stalk tissues were sampled at the different plots to determine the variation in nutrient uptake as an indicator of enhanced nutrient cycling. A soil moisture probe was used to monitor soil moisture below the tillage zone as an indicator of water cycling. The corn yields of all three trials were compared at harvest and the root distribution was also studied. They are shown in Table 4.

Table 4. CORN YIELDS BY DEEP SLOT TREATMENT		
Treatment	Deep Slot (bu/acre)	No Slots (bu/acre)
Site 1	207	178
Site 2	206	175

“The goal of this research project was to enhance corn producers’ understanding of the benefits of deep-slot tillage by better soil water cycling, better root development at greater depths, and better macro- and micro-nutrient uptake,” stated Bruce Noel, a CMPM board of director and corn producer from Leslie. “The research showed that corn yields were repeatedly higher when planted in fields with the deep-slot treatment and corn root penetration depth was observed to be deeper in the trials with deep-slots.” The corn yields for the plots varied from 29 to 31 bushels per acre higher for the treated sites over the conventional sites. It is believed that the deeper root penetration contributed significantly to the higher corn yields.

Continued on page 4



PRODUCTION AND CONSERVATION INVESTMENTS

The research project also showed that deep-slot tillage offers a variety of economical and environmental benefits. “The deep slot tillage leaves the surface residue virtually undisturbed and soil structure intact; only the planting zone is loosened,” added John Oakley, CAIF board of directors president and a corn producer from Dimondale. “The surrounding untilled area protects the soil from erosion, conserves carbon, and improves soil quality and water infiltration, enabling the crop to more effectively utilize essential elements.” A more developed root system will enable the crop to tap into deeper soil layers and promote more nutrient and water cycling in the ecosystem. With improved soil conditions for root development, better air exchange within the soil atmosphere, and enhanced water movement within the soil, corn yields will increase. The cost for farmer adaptation of deep slot tillage is estimated at \$25 per acre, which could be recovered with just a 10% yield increase on 140 bushel average corn yield at a market price of \$2 per bushel.



Nematode Control

Not only are corn producers looking into alternative agronomic practices such as deep-slot tillage, but they are also looking at pest management as a way to improve corn production and profitability. Corn producers are largely affected in some areas by pests, such as nematodes and rootworms. Nematodes are some of the most common pests found in corn worldwide and cause the most damage in the spring. Nematodes respond to adverse conditions (dry, warm soils) by migrating deeper into the soil. Typically, they feed very early in the spring when soils are cool and moist. During the summer months, these nematodes move to depths of 2-4 feet from the soil surface. Therefore, detection of these nematodes is difficult during the summer. As a result, nematode problems often are not properly diagnosed.

Corn producers have a limited number of options for controlling nematode problems, and many of the effective nematicides have been removed from the market. There are however, still a few compounds labeled for control of plant parasitic nematodes. Cultural control strategies such as crop rotation, delayed planting, and

alternative tillage have little effect on corn nematode densities and nematode-resistant corn hybrids are lacking.

CMPM teamed up with CAIF to test the effectiveness of Chancellor, a new product for nematode control. CAIF completed research at two mid-Michigan sites. One site had an unknown nematode population at the time of selection and the other was a field with known needle-nematode populations that had impacted corn

yields in previous years. Treatments included Chancellor at the labeled rates and another nematicide at the labeled rates. These treatments were applied with three replications per field. Both nematicides were applied in-furrow at planting. Nematode samples were collected at planting, in season, and post harvest to test the effectiveness of the nematicides. Yield data for both the control and treatment plots was also collected and

is shown in Table 5. According to John Oakley, CAIF board of directors president and a corn producer from Dimondale, “It appears that using the Chancellor product can have a positive impact on corn yields, however, nematode population information is needed to document the effect as a nematicide. In order to conclusively affirm that Chancellor would be an effective nematicide, more intense research would need to be completed.”

Table 5. CORN YIELDS BY TREATMENT		
Site	Treatment	Yield (bu/acre)
1	None	123.14
	Chancellor	138.00
	Cruiser	129.60
	C & C	136.42
2	None	117.03
	Chancellor	142.31
	Cruiser	134.31
	C & C	125.12

As agronomic issues arise, CMPM is ready to tackle those issues through research projects and through partnerships with industry, agricultural and university groups. Every fall, CMPM develops a list of principal research topics for the year both in agronomic issues and new use development. Through an annual request for proposals, and submission of projects by researchers, CMPM has focused on many agronomic issues.



PRODUCTION AND CONSERVATION INVESTMENTS

Center for Excellence Highlights New Tillage and Conservation Practices

CMPM has partnered with the Lenawee Conservation District, the Natural Resources Conservation Service, and the Michigan Soybean Promotion Committee to conduct an extensive research and demonstration



Tom VanWagner explains the irrigation system at Bakerlad Farms

project, known as the Lenawee County Center for Excellence. Through the Center for Excellence, new practices can be tried in test plots for producers to learn and gather data without having to first alter their on-farm production practices.

“Corn and soybean producers from across Michigan have benefited greatly from check-off and privately funded research at the Lenawee County Center for Excellence for seven years,” said Richard Godfrey, CMPM president and a corn grower from Jonesville. “The Center for Excellence allows corn producers, like me, to see the effects of the new research, without having to assume the risk.”

The Center for Excellence, which began in 1998, is a research and testing facility which consists of plots on two farms in Lenawee County, Bakerlad Farms and Raymond & Stutzman Farms. The plots test various topics

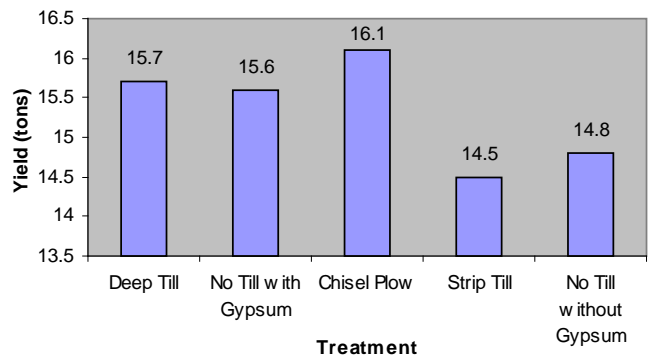
including conservation tillage practices, soil fertility levels, sub-irrigation, and testing new seed genetics to determine how producers can increase productivity while conserving Michigan’s natural resources. The Center focuses on researching, developing and refining viable conservation tillage systems that can be adopted on a local level.

At Bakerlad Farms, the test plot includes continuous corn silage. This year, the test plots had one of five different treatments:

1. Deep Till
2. No-Till with Gypsum
3. Chisel Plow
4. Strip-Till
5. No-Till without Gypsum

The control plot was no-till with row cleaners and had a 14.8 ton yield. Table 6 illustrates the yield results.

Table 6. 2005 Yield Results - Continuous Corn Silage



Five test plots were done at Raymond & Stutzman Farms:

1. Traditional
2. Precision
3. 60# Nitrogen
4. 0# Nitrogen
5. “What-If” Plot (High seed and nitrogen rates)

The yields and returns of the plots are shown in Table 7 and are based on a corn price of \$2.51 (taken from the Chicago Board of Trade at the close on July 5, 2005).

Table 7. 2005 Corn Plot Results

System	Yields	Returns
Traditional	206.87	245.91
Precision	200.04	237.12
60# Nitrogen	207.17	255.01
0# Nitrogen	192.92	224.19
What-If	204.21	198.77

PRODUCTION AND CONSERVATION INVESTMENTS

Michigan Corn Producers Protect the Environment Through Carbon Management

Farmers are the original stewards of the land and thanks to research funded by the Corn Marketing Program of Michigan (CMPM) and Michigan State University (MSU), the state's corn producers may soon play an integral role in America's fight against global warming. By planting cover crops and instituting other agricultural management practices to reduce the amount of carbon in the atmosphere and put it to work in the soil, corn producers can really lessen the effects of factory and automobile-produced emissions.

"As a lifelong farmer in Michigan, I know firsthand the importance of environmental stewardship," said

Richard Godfrey, CMPM President and a corn producer from Jonesville. "Investing in projects today that can help identify the best agronomic practices for tomorrow, ensures our farm that's been in my family for over 100 years remains a viable operation for my grandchildren."

Carbon sequestration allows farmers to reduce the amount of carbon in the atmosphere by trapping it in the soil, thereby reducing the amount of greenhouse gases in the atmosphere. With funding from CMPM, MSU researcher Dr. Kurt Thelen was able to team up for a third year with researchers from across the nation to determine the best way to sequester carbon in soil.

"In previous years, we found the farther north you go, the greater your potential to incorporate carbon into the soil," explained Thelen, an Associate Professor in the MSU Crop and Soil Sciences Department. "This year, we really focused on which materials would prove to be the best at sequestering carbon in a cropping system with minimal crop residue left in the field."

Thelen's research centered on determining the effectiveness of a winter rye cover crop, composted manure, and fresh manure, alone and in combinations. The MSU research project was conducted at two test plots in East Lansing and Chatham, Mich. to allow for the comparison of carbon sequestration at different latitudes.

In East Lansing, Thelen and his research group found rye to be an important component of carbon sequestration but not on its own. Rye was the only treatment that did

not significantly increase the soil carbon levels over a two year period, but rye plus compost had the most significant impact on total soil carbon levels. In the 0-2 inch profile tested by the team, the rye plus compost combination increased the amount of carbon by approximately 2.25 tons, a 167 percent increase of the baseline carbon concentration. Adding rye to the treatments also had the extra benefit of keeping the soil bulk density of the treatments relatively stable over the two years.

At the Chatham test plot, all treatments exhibited a trend for an increase in soil carbon levels after two years, ranging from 108 to 153 percent of the baseline carbon levels. In addition, there was a trend for all treatments to increase total nitrogen levels in the soil as well.

In addition to the environmental advantage of carbon

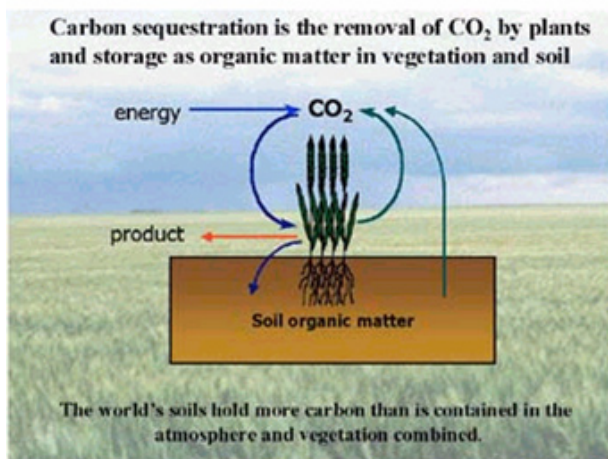
sequestration, there are agronomic benefits as well. High carbon levels in the soil provide better water infiltration, increase soil fertility and reduce compaction and run off. Thelen works with corn producers within the state to determine the real agronomic benefits to Michigan farmers.

"Working with the corn growers who will actually be putting these practices to use is extremely helpful to us because they give us advice based on what they are already doing in their fields," he said. "We want to make sure all of our research is applicable to mainstream agriculture and is

useful to those funding the project, Michigan's corn producers."

The agronomic and environmental benefits of carbon sequestration may one day also result in an economic advantage to Michigan producers. A program authorized by the Federal Air Pollution Control Act allows farmers to sell credits for the carbon sequestered in their soil to industries releasing carbon gasses into the air. Some utility companies have already begun buying carbon credits from Iowa farmers and this practice could soon spread to other states.

The MSU carbon research project is part of the 10-state Consortium for Agricultural Soils Mitigation of Greenhouse Gasses, a federal study investigating ways to limit greenhouse gasses in the atmosphere. "As part of the 10-state national research project, the MSU work will help define U.S. policy on greenhouse gas mitigation," Thelen said. "On a statewide level, this work will position Michigan growers to take advantage of public and private sector initiatives for carbon sequestration."



Research by Dr. Kurt Thelen of Michigan State University's Crop and Soil Science Department explored the carbon cycle.



NEW USE DEVELOPMENT

The Corn Marketing Program of Michigan (CMPM) works to stretch the producer penny by not only focusing on production research and enhancing traditional markets, but also by creating new and innovative markets for corn. CMPM works with a diverse group of partners to look 5, 10, even 20 years into the future to identify new markets and possible uses for Michigan corn. Through state check-off funded research, CMPM has played an integral role in the development of corn-based polylactic acid fiber or PLA, which can be used to make plastics, fabrics, and packaging materials. That is just the tip of the iceberg when it comes to the development of new uses and markets for corn.

Michigan Corn...Harvested From the Field to Discover New Drug Technologies

We have all heard the saying, “an apple a day keeps the doctor away,” but who ever envisioned that one day we would be able to say “a kernel [of corn] a day keeps the doctor away.” Corn producers have long known how valuable their crop is, from the largest use – livestock, to the second largest use – exports. Through research funded by the Corn Marketing Program of Michigan (CMPM), corn producers in Michigan are taking their crop up the value chain even higher through the development of new drug technologies utilizing the golden crop.

CMPM strives to develop new and innovative uses and markets for Michigan’s corn crop, while still preserving our current markets, such as livestock. By working co-operatively with Dr. Rawle Hollingsworth, President of AFID Therapeutics, Inc., corn is now being used in the development of a carbohydrate-based drug chemistry program.

Dr. Hollingsworth’s research explores the molecular structure of carbohydrates, including that of corn and works to develop new uses for them. One of the most promising new uses for these corn based carbohydrates includes manufacturing large quantities of a key intermediate needed to produce a cholesterol-lowering drug. “Basically, we take carbohydrates from corn and convert them into chemical building blocks that will be used in various chemical compounds for further drug development,” added Hollingsworth. Along with this and other intermediates or building blocks, the corn-based products developed by Dr. Hollingsworth have the ability to produce medications for cancer, diabetes, antiviral and antibacterial diseases.

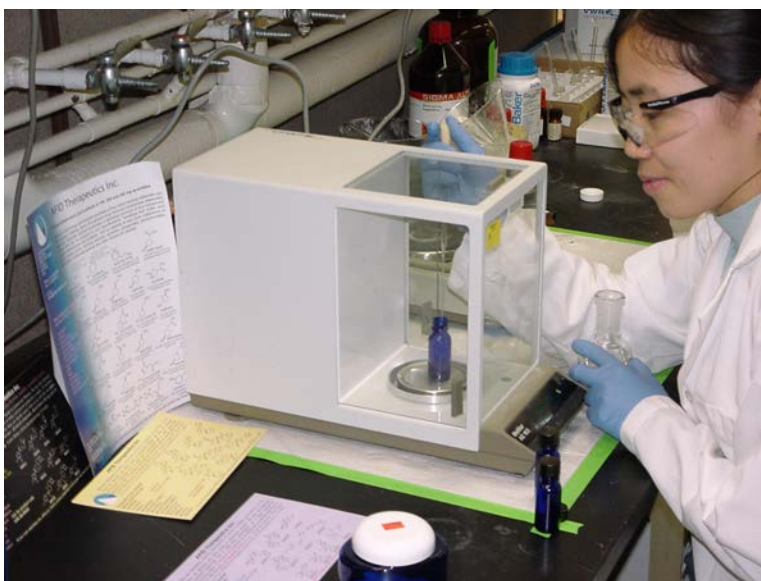
Not only is this technology exciting for scientists, but farmers as well. “As a farmer, I always feel a sense of pride driving past corn fields. I can see the value of the corn crop as we help to fuel the nation with ethanol and also are helping to feed livestock, but knowing that those fields are now providing medicines which could ultimately save lives, gives me extra pride as an

American,” said Clark Gerstacker, CMPM treasurer and chair of the National Corn Growers Association Research and Business Development Action Team. “Michigan corn producers have a long history of feeding and fueling our nation and our world. Now, with innovative research such as this, we are ready and willing to step up to the challenge of providing medicines to fight disease as well.”

In order to help fight disease, AFID Therapeutics, Inc. makes use of a chemical technol-

ogy platform that utilizes intermediates obtained from cash crops such as corn. AFID Therapeutics, Inc. engages in four activities in the therapeutic aspects of the drug delivery area:

1. Applying technology to proven off-patent drugs to improve performance, reduce unwanted side effects, support new modes of delivery or expand opportunities for which the drug can be prescribed.
2. Applying technology to new drugs developed by AFID Therapeutics, Inc. to improve performance, reduce unwanted side effects, support new modes



Dr. Li Gao of AFID Therapeutics Inc. prepares a shipment of an advanced chemical intermediate for a pharmaceutical chemistry customer. The foreground shows examples of the chemical structures of the high value drug intermediates that AFID prepares from starch, arabinose, maltodextrins and other carbohydrates obtained from corn.

Michigan Corn Producers Protect the Environment

Continued from page 7

of delivery or expands opportunities for which the drug can be prescribed.

3. Licensing of new technology to pharmaceutical and biotechnology companies for use with off-patent drugs or to extend the life of mature drugs.
4. Licensing of technology to pharmaceutical and biotechnology companies for use with the development of new drugs.

“As a chemical scientist working in pharmaceuticals, it’s vital that I work to continually improve upon the existing drug compounds currently on the market. It is a goal to increase the usage capabilities of medicines and also to help reduce the occurrence of unwanted side effects,” added Hollingsworth. “In addition, I strive to develop new technologies that will fill new market opportunities and help to fight off diseases.”

Just as scientists work to create and fill new market opportunities, so do America’s crop farmers. “It is imperative that we continue to develop new markets and uses for corn, especially with record production over the past couple years,” said Richard Godfrey CMPM president. “As a corn producer, I want to know that as our nation continues to have record yields, I will have an end market for my product. I just never imagined that it might end up saving lives in the long run.”

The products currently being developed by AFID

Therapeutics, Inc. are varying classes of molecules. Once these families of molecules are developed they are sold to pharmaceutical companies who in turn use them within drug compounds to develop new medicines. These molecules are highly valuable since they are made from carbohydrates which displace the petrochemicals normally utilized for drug development.

Not only does Hollingsworth serve as President of AFID Therapeutics, Inc., he is also a professor at Michigan State University in Biochemistry and Molecular Biology which he takes very seriously. “The land grant institution is predicated on a covenant between itself and the community that it serves and I take that very seriously in my role as a university professor,” said Hollingsworth.

“Corn producers in Michigan are very proud of the accomplishments that Dr. Hollingsworth has achieved in terms of new molecular compounds and are very proud of the partnership that CMPM has developed with AFID Therapeutics, Inc.,” added Jody E. Pollok, CMPM executive director. “In order to remain on the cutting edge, we must continually look beyond traditional partnerships in order to work outside the conventional realm of agriculture. By working with Dr. Hollingsworth through research projects, we will maintain corn’s position on the cutting edge not only in corn production, but also in pharmaceuticals.”

LEVERAGING STATE POWER TO CONDUCT NATIONAL RESEARCH

In an effort to stretch the producer penny, the Corn Marketing Program of Michigan (CMPM), works cooperatively on research projects with 27 other corn-growing states across the United States through the National Corn Growers Association (NCGA). CMPM uses check-off dollars to further research efforts in value-added business development, technology refinement, and new use discovery. CMPM is working cooperatively with NCGA on four different research projects, each looking to increase demand and add value to the U.S. corn crop. These projects focus on using underutilized portions of the corn kernel, converting ethanol into chemicals, mapping the corn genome and sequencing maize traits.

Corn Fiber

Corn fiber is the least valued and least utilized portion of the corn kernel. It is currently sold as a low-value protein carrier in corn gluten feed (CGF) and dried distillers grains with solubles (DDGS) to the livestock industry. Corn fiber represents a significant amount of the total mass processed by ethanol plants, and continued expansion of the ethanol industry will only increase the amount of corn fiber co-products on the market and will continually drive down the price.

“Conversion of the fiber in ethanol byproducts into higher value products will have two benefits,” said Clark Gerstacker, CMPM treasurer and chair of the NCGA Research and Business Development Action Team. “First, it will decrease the total amount of high-fiber feed products entering the market, which should reduce pressure on the market of high-fiber feed products.

Second, increasing the products made from corn in wet and dry mills will lead to a larger and more diversified market for corn.”

The fiber project will develop commercially feasible technology to separate corn fiber recovered during the wet milling process into the component substances.



Valuable chemicals will be separated from the fiber stream and the sugars will be converted into ethanol or other chemicals, such as propylene glycol or ethylene glycol which are used in anti-freeze and deicing products, solvents and inks. Ultimately, fiber separation and process technology can be developed for wet and dry mills, improving the profitability of many corn based bioproducts.

Developing Chemicals from Corn

Increased interest in the production of chemicals from renewable resources has created an opportunity to open up new and diverse markets for Michigan’s corn crop to be utilized. Through research being conducted at Michigan State University, a new reactive distillation technology has the potential to convert ethanol into high-value chemicals. Reactive distillation is a technique in which a mixed chemical stream is treated with a reactive chemical in the presence of a catalyst. This results in a mixture of chemicals that can be easily separated, saving both energy and plant design costs. “We are very optimistic that this project has the potential to develop a profitable, renewable biochemical-based industry, with corn being the chief feedstock,” added Gerstacker.

Mapping the Corn Genome

One of the most exciting projects being done through NCGA is mapping the corn genome. NCGA is working cooperatively with the National Science Foundation who allocated \$30 million to support this project. “Once the corn genome is mapped, it will provide us with the baseline information as to how the corn plant really works and what properties it possesses,” said Gerstacker. “Genome mapping will further the recognition

and understanding of traits that will enhance corn’s position as the ideal crop for food, feed, fuel and industrial uses.”

The next phase of the project will be to place larger pieces of the genetic map together. Over the course of the next several years, it will be of key importance to continue efforts such as functional genomics and studying the full set of proteins encoded on a genome. It is equally important to develop genetic and physical maps of the genome. Once these tools are in place, researchers and plant breeders will be able to quickly and efficiently introduce new traits into corn. Advancements in traditional breeding programs as well as programs, to introduce new traits using molecular biology, offer exciting new opportunities for corn growers.

“This project is not only allowing us to understand corn, but is expanding our capacity to sequence other important genomes,” said Gerstacker. “As a result of the corn genome, new tools have been developed that will allow other crops to be sequenced much more quickly and effectively. When we understand that information, the sky truly is the limit.”

Sequencing Maize Traits

In order to develop strong, efficient traits, an artificial chromosome for corn has been developed. Researchers use a number of procedures to build a chromosome that can contain more than one desired trait. Once successful, this technology will enable researchers to speed the creation of seed corn with multiple desired characteristics. As a result, crops with multiple favorable genes can be quickly developed.

As part of the maize trait program, NCGA is working with a biotech company, Divergence Incorporated, to develop traits that will provide resistance to nematodes. “This is just one innovative example of what can be done as a result of sequencing maize traits,” said Gerstacker. “This represents a huge milestone in efforts by growers to find solutions to their own production challenges and reap the rewards themselves.”

“By combining our resources with those of other states, we can complete research on a national scope that individually we could not afford to do. We truly impact the profitability of the corn industry,” said Jody E. Pollok, CMPM Executive Director. “Through past, current, and future research projects, CMPM hopes to continue increasing markets and uses for corn.”



Four Michiganians Take On National Leadership Role in 2005

Four Michigan corn industry leaders have shown that the state is leading the way for farmers across the nation, as they were recently selected to represent over 300,000 corn growers from across the U.S. on national corn action teams.

"It is a positive reflection on Michigan as a whole when our corn producers are asked for their leadership in national activities," said Jody E. Pollok, executive director of the Corn Marketing Program of Michigan (CMPM). "National action teams set the direction of the industry for corn growers across the nation. The involvement of Michigan growers at this level demonstrates not only our commitment to enhancing the bottom line for farmers, but Michigan's influence at the national level as well."

That influence took on a new dimension when CMPM treasurer Clark Gerstacker was named Chair of the NCGA Research and Business Development Action Team after serving the team for four years. "This action team looks at areas such as corn processing, genome mapping and related research. Current research projects will add to the number of corn uses and could yield endless possibilities," explained Gerstacker, a corn grower from Midland. "Although Michigan ranks only 11th in terms of corn production, we strive to be at the forefront of research and market development. The CMPM board of directors is working hard to make Michigan the first choice for emerging corn-based industries developed through state-funded research, which is complemented by my work on the national level."

As the ethanol industry continues to grow, Michigan corn producers will have a strong voice on the NCGA Ethanol Committee, with CMPM board member Bruce Noel named Vice Chair. The Ethanol Committee works to unify the industry related to the promotion and marketing of ethanol, a renewable fuel derived from corn. "The U.S. imports 37 million gallons of gasoline per day, an amount that has more than doubled in just the past three years. For every barrel of American-made ethanol produced, 1.2 barrels of petroleum are displaced. Since 1978, U.S. ethanol production has replaced over 14 billion gallons of imported gasoline or crude oil,"

said Noel, a corn grower from Leslie. "Michigan alone could put a real dent in U.S. dependence on foreign oil. Annually, we use five billion gallons of gasoline within the state. If all that gas was blended with just 10 percent ethanol, Michigan would use 500 million gallons of the renewable, corn-based fuel. Just imagine how much foreign oil that would displace."

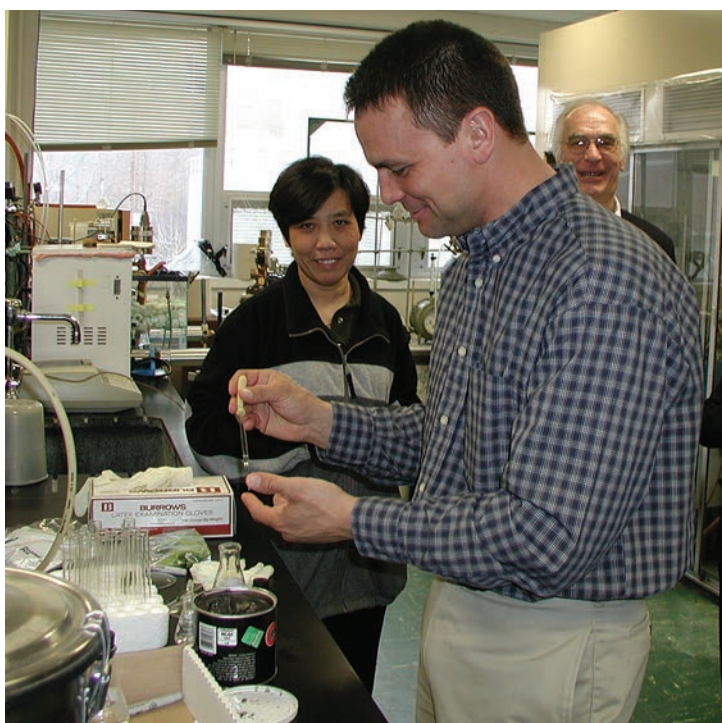
As the nation's corn producers work to replace petroleum-based products with biobased goods, policy makers need to be educated and kept up-to-date about new developments. Helping with that charge is MCGA president Brian Kreps who was reappointed to the Public

Policy Action Team. This team gives direction to NCGA in regards to addressing public policy issues that impact U.S. corn. "The only thing it takes to make a difference in the corn industry is to get involved. As a member of the MCGA board of directors, we work with our MCGA members to plot the best course for our state's corn growers," said Kreps, a corn grower from Temperance. "By serving on action teams, we take our state plans and issues to a national level.

Every farmer has the

right to voice his ideas, and groups like MCGA give us the strength in numbers we need to be heard."

Not only is it important to be heard on policy issues, but on trade issues as well. Also representing Michigan is Alan Peters, of Blissfield, who was appointed to the Joint Trade Policy A-Team, a joint team between NCGA and the U.S. Grains Council. The goals of this group include increasing support for NCGA's international trade agenda, increasing funding for market development programs, and increasing grower education regarding the importance of export markets. "As we continue to evolve into a world economy, it becomes more and more important for our voices to be heard on world issues," Peters said.



Clark Gerstacker, NCGA Research & Business Development Action Team Chair, checks out research being conducted at Michigan State University.

2005 BOARD OF DIRECTORS

District 1

Jay Drozd, Allegan, Secretary

District 2

Dan Klein, Plainwell

District 3

Richard Godfrey, Jonesville, President

District 4

Lyn Uphaus, Manchester, Vice President

District 5

Bruce Noel, Leslie

District 6

Ken Wadsworth, Sandusky

District 7

Phil Block, Birch Run

District 8

Steve Error, Fillion

District 9

Clark Gerstacker, Midland,
Treasurer

Executive Director

Jody E. Pollok

Ex-Officios

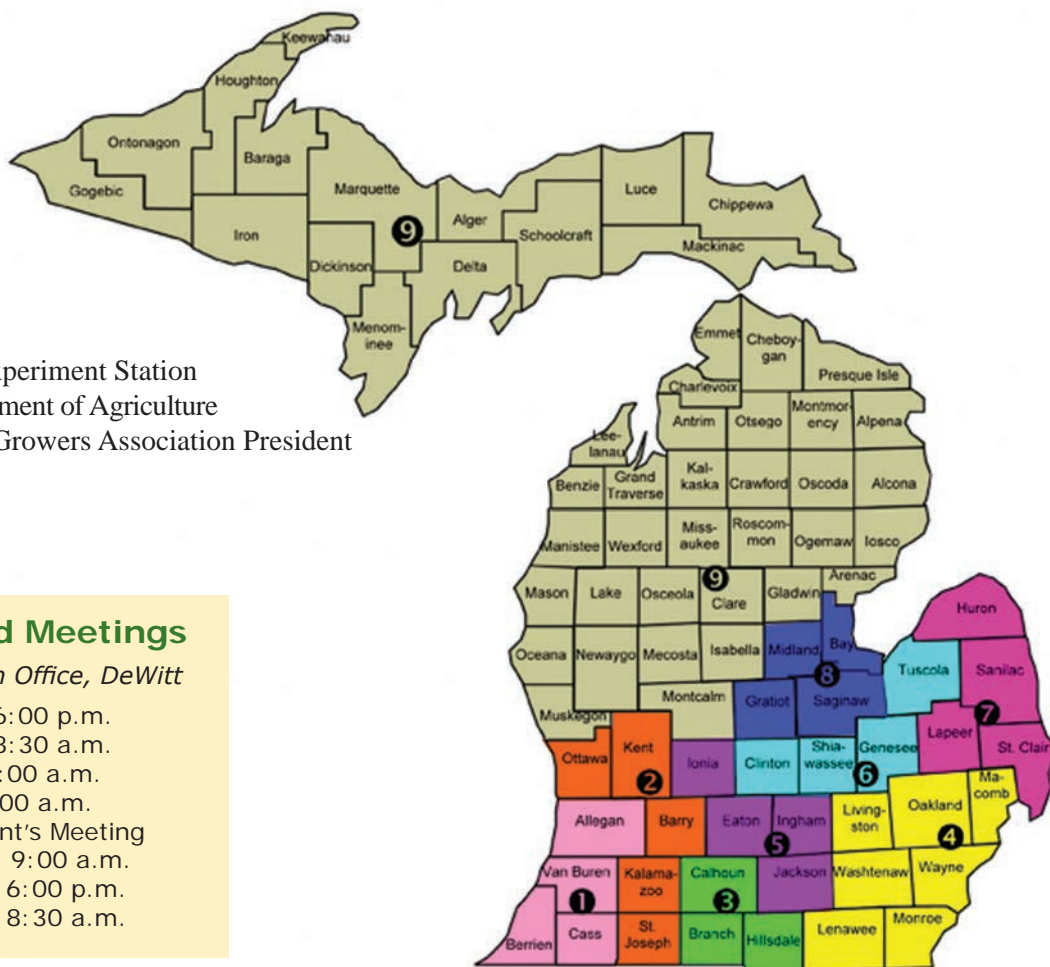
Dr. Doug Buhler, MSU Ag Experiment Station

Robert Craig, Michigan Department of Agriculture

Brian Kreps, Michigan Corn Growers Association President



Pictured from left to right: (back row) Ken Wadsworth, Brian Kreps, Bruce Noel, Phil Block, Steve Error; (front row) Jay Drozd, Richard Godfrey, Clark Gerstacker; Not pictured: Dan Klein and Lyn Uphaus



2006 CMPM Board Meetings

Held at the Michigan Corn Office, DeWitt

January 25, 2006, 6:00 p.m.

January 26, 2006, 8:30 a.m.

March 16, 2006, 9:00 a.m.

June 15, 2006, 9:00 a.m.

August 2006 - President's Meeting

September 14, 2006, 9:00 a.m.

December 13, 2006, 6:00 p.m.

December 14, 2006, 8:30 a.m.



Corn Marketing Program of Michigan
12800 Escanaba Drive, Suite B
DeWitt, MI 48820

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Corn Marketing Program of Michigan



Headquartered in DeWitt, CMPM is a legislatively-established statewide program that utilizes one-cent per bushel of corn grown in Michigan and sold. Investments are made in the areas of research, education and market development in an effort to enhance the economic position of Michigan corn producers. CMPM works cooperatively with the Michigan Corn Growers Association, a grassroots-membership association representing the state's corn producers' political interests.

As you attend the many tradeshow and meetings held throughout the state during the winter months, please be sure to look for the Michigan Corn booth and visit with the staff and board members.

For more information on the Corn Marketing Program of Michigan, call the office toll-free at 1-888-323-6601 or visit us online at www.micorn.org.