Soy Research Generates Promising Results for Type 2 Diabetics

Research funded in part by the Illinois Council on Food and Agricultural Research (C-FAR) has shown that individuals with type 2 diabetes may be able to lower their susceptibility to kidney and heart disease by consuming soy protein. John Erdman, a professor of nutritional sciences at the University of Illinois at Urbana-Champaign (UIUC), and a team of UIUC researchers are seeing promising results in their investigation on whether type 2 diabetics can benefit from adding soy protein to their diets. “One doesn’t have to completely restrict the consumption of animal protein, but by adding soy protein to the diet, there could be a benefit for type 2 diabetics,” said Erdman.

C-FAR funding was instrumental in the commencement of the research initiative. “Without C-FAR funding, there would have been no opportunity to pursue this avenue of research,” said Erdman.

Diabetes is reaching epidemic proportions in the United States and other countries with westernized lifestyles. Diabetes is a disease in which the body does not produce or properly use insulin – a hormone that is needed to convert sugar, starches and other food into energy needed for daily life. According to the American Diabetes Association, approximately 18.2 million people in the U.S. (6.3% of the population) have diabetes, with type 2 diabetes accounting for about 90% to 95% of all diagnosed cases of the disease.

CONTINUED ON PAGE 3
Greetings

TIME-OUTS: STRATEGICALLY GUIDING THE TEAM

This past winter I watched Coach Bruce Weber strategically guide the Illini basketball team to the Final Four using time-outs to evaluate its play and plan for the next few minutes of the game. It occurred to me that, while they were basketball games, it really was no different than organizations I have been affiliated with. Successful organizations take such time-outs for reflection and projection.

Your C-FAR team is in the process of doing just that.

Our time-outs will focus on five key initiatives. The first focuses on seeking and utilizing feedback received from attendees of our membership meetings. Initiated this past year, we will continue to request this information on an ongoing basis. The second was a membership-wide survey mailed to 437 C-FAR members that resulted in significant feedback. Both have been invaluable tools to begin reflection, evaluation, and projection.

The third time-out was held in late-May with your working group chairs and vice chairs convening for a several hour discussion on a myriad of topics. They came together for a dual purpose. The first portion of their meeting was dedicated to reviewing C-FAR and its research programs to ensure their understanding. As leaders of the organization, this type of understanding is of course important. Secondly, a discussion was held as to how working group meetings can be most valuable for attendees. I had the pleasure of sitting in on this meeting, and several thought-provoking ideas were surfaced.

Early July marked time-out number four. Your board of directors engaged in a meaningful mini-retreat. While each member of the board was able to float any topic of interest, a significant amount of our time was dedicated to absorbing the results of the membership survey conducted earlier this year. It was an extremely beneficial process and we look forward to sharing our key observations and discussions with you soon.

The fifth time-out will be a membership review of our research focus areas. Further consideration is warranted as to when such a review would be most advantageous. We do know, however, that the research priorities identified by our membership provide the bedrock of our research portfolio’s success, and a focus on this important area must be nothing less than highly strategic.

Why are these time-outs necessary? I strongly believe we must demonstrate the highest accountability to our membership and to the State of Illinois. The series of initiatives I have described have been and will be undertaken with the greatest of seriousness.

We will continue to seize opportunities for taking planned time-outs. Doing so will sharpen our focus, allow for adjustments to be made to meet membership needs, and keep our organization’s vision for the future current. Just as Coach Weber did with his team, our current set of strategic time-outs will create winning results for the C-FAR team and its many partners.

Alan Puzey
Chairman of the Board
Soy Research Generates Promising Results for Type 2 Diabetics

CONTINUED FROM PAGE 1

In type 2 diabetes, either the body does not produce enough insulin or the cells ignore the insulin. Insulin is necessary for the body to transport the sugar from the blood into the cells. When glucose builds up in the blood instead of going into cells, the cells may be starved for energy and, over time, high blood glucose levels may damage a person’s eyes, kidneys, nerves, or heart. Type 2 diabetes is associated with older age, obesity, family history of diabetes, prior history of gestational diabetes, impaired glucose tolerance, physical inactivity, and ethnicity. African Americans, Hispanic/Latino Americans, Native Americans, and some Asian Americans, Native Hawaiian, or other Pacific Islanders are at particularly high risk for type 2 diabetes. Type 2 diabetes is also increasingly being diagnosed in children and adolescents.

“Type 2 diabetes is a health problem that is increasingly prevalent among adults and children in our population. Individuals who suffer with it commonly develop serious debilitating health problems,” said Karen Little, C-FAR research vice chair and registered dietician. “If simple changes, such as adding soy products to the diet, will help manage the disease, these individuals would enjoy not only improved quality of health and life, but also might be able to avoid the costly and devastating consequences of the disease as they age.”

Diabetic nephropathy (kidney disease) contributes to approximately 35.8% of all new cases of end-stage kidney disease. Therapies to prevent or treat diabetic nephropathy are greatly needed. In patients with diabetes, elevations in urinary albumin excretion (UAE) indicate anomalies in the kidney and is commonly measured to aid diagnosis and to monitor progression of the disease. Dietary protein restriction has long been known to reduce UAE and has been the conventional treatment used.

To examine the potential health benefits of consuming soy protein, Erdman and fellow researchers conducted a seven-month study where patients at the Department of Veterans Affairs Illiana Health Care System in Danville added soy-based protein to their diets. The study included men, ages 53 to 73 years old, with advanced type 2 diabetes. The men were provided with either an isolated soy protein powder to add to their diets, or a powder containing casein, an animal-based protein derived from milk. The participants were not told which type of protein they were consuming. After consuming one type of protein powder for two months, followed by a month to clear out their system, the men were asked to switch to the other type of powder for two months. Researchers monitored the levels of protein excreted in the patients’ urine throughout the change in diets.

Researchers found that when consuming the soy powder, the participants showed a 9.5 percent decrease in urinary protein excretion indicative of worsening kidney function. That compared to an 11 percent increase when consuming the casein powder. The men also showed slightly higher levels of HDL cholesterol in their blood with soy. This is the “good” cholesterol that helps clear arteries. These results suggest that type 2 diabetics may benefit from including some soy protein products in their diets. “We were hoping just to slow down or halt increases in unwanted protein levels. In fact, we saw a statistical reduction. The results of this study were even better than we had hoped for,” said Erdman.

It is not exactly clear why the consumption of soy protein seems to demonstrate these beneficial effects. Researchers believe it may be related to soy’s ability to improve blood flow, and thus the filtering function of the kidneys. It also may be related to the positive impact on cell function from the isoflavones (plant phytoestrogens) found in soy.

“While this study included only a small number of subjects, it is the most comprehensive to date,” said Erdman. “It highlights the importance of continuing to fund research in this area, which has the potential to improve the health of millions of people.”

This research was supported by the State of Illinois via C-FAR, Protein Technologies International, the Foundation for Science and Technology in Portugal, and a Fulbright fellowship.
Factors Influencing Dairy Producers to Grow Businesses

The dairy industry in the United States is experiencing structural changes in terms of size, concentration, and location of dairy farms. The number of farms and milk cows nationwide is projected to decline, but the actual quantity of milk production in the United States is projected to remain nearly constant due to increased productivity. Over the past decade, national milk production has increased by about 1.2 percent per year, as milk production per cow increased by 2.2 percent per year. Milk cow numbers declined about 1 percent per year.

Regional shifts in dairy production are also evident. From 1997 to 2002, milk cow numbers increased by 48% in New Mexico and 43% in Idaho, whereas cow numbers in Midwestern and eastern states have declined. While Illinois offers an abundance of feed production, a favorable environment, and a strong farming community, the dairy industry in the state continues to decline. This trend has negative economic consequences reaching far beyond the dairy sector.

Several states have developed programs to expand or attract new dairies. In Kansas, an incentive program has been implemented to attract new dairies. Energy incentives are provided by many communities, offering economic development rates and incentives. Tax breaks are also given to those businesses that are eligible. South Dakota has attracted producers from other states by building a new cheese factory that would require about 65,000 cows to produce milk for cheese. Counties in South Dakota can designate areas for livestock operations and have these areas approved by state agencies so that potential livestock operators do not have to go through a lengthy permitting process. Wisconsin has tax benefits and established an Agricultural Development Zone Program to attract and encourage the expansion of agricultural businesses.

To better understand what factors drive producers to expand their dairy operations, Phil Eberle, associate professor of agribusiness economics at Southern Illinois University at Carbondale, and his research team conducted a multistate survey of milk producers. “The purpose of our research was to directly elicit from producers factors important to dairy expansion in their location,” said Eberle. The project was funded through C-FAR’s External Competitive Grants Program.

SURVEY OF DAIRY PRODUCERS

Researchers surveyed dairy producers that had received building permits or new health permits during 1997 to 2002 expecting those producers were the most likely to have expanded or relocated their dairies. A questionnaire was sent to milk producers in eight states, including Illinois, Iowa, Ohio, Idaho, Kansas, Wisconsin, South Dakota, and New Mexico. Of the 1,264 surveys sent, 405 milk...
producers responded, a 32% response rate. From 1997 to 2002, 57% of the dairy producers expanded their farms, 18% relocated, and 29% built a new dairy. Among Illinois respondents, 68% of the producers expanded, 13% relocated, and 38% built a new dairy.

Survey results reflected the following points regarding how different factors may influence producers to expand their dairy operations.

• Market for milk and co-products ranked as the most important factor consistently across states, size of dairy, and by dairies that relocated.

• The second most important factor was resource availability and resource prices, but this ranking varied by size of farm. Small dairies ranked family and community ties second and large dairies ranked regulatory environment as second.

• Public promotion and support, in general, ranked as least important for dairy growth, but extension service and university research had a rating reflecting a positive impact.

• Assistance in obtaining licenses and permits and guaranteed loans also had positive ratings, but to a lesser extent than extension and university research. Dairy operators who expanded or who have large operations rated guaranteed loans higher. Large operations also rated labor training programs more positive.

• Tax breaks and dairy recruitment activities were rated as neutral factors.

Overall, the results suggest that economic and social factors outweigh public promotion and support as important reasons producers decide to expand or locate a dairy in a given area.

HOW ILLINOIS COMPARES
Illinois had the most definite downward trend in milk production of the states evaluated. Illinois dairy operators perceived Illinois as having a number of items that were rated lower in importance than other states experiencing growth in milk production or maintaining their production. Illinois producers rated the items related to ease of regulatory compliance, land prices, utility cost, and climate lower than most of the other states. “Illinois milk producers have perceived themselves as having economic disadvantages with respect to land and utilities; and environmental and business disadvantages with respect to climate and ease of regulatory compliance,” said Eberle.

Items that Illinois producers rated higher than other states were water availability and local milk prices as compared to Idaho, New Mexico, and Kansas. These results are supported by the facts that those states are more arid than Illinois, and milk prices received by producers in those states were lower than prices received by Illinois producers. Illinois producers also rated family relationships as a factor for dairy expansion higher than producers from Idaho, New Mexico, and Kansas. Illinois producers indicated that community amenities, dairy cooperatives, and land availability were advantages over Ohio producers. In terms of ratings, Illinois producers had no perceived advantages over South Dakota and Wisconsin producers.

“Although public promotion and support for dairy was not ranked high, the results suggest a role for such activities in Illinois, especially for research and extension,” said Eberle. “Research in Illinois should determine if the perceived economic, environmental, and regulatory limitations for Illinois producers are factual. If so, then researchers should assess whether management strategies or technologies exist to maintain a viable dairy industry in Illinois.”

“Extension can provide outreach for management strategies and technologies, and focus on activities to aid in regulatory compliance. Illinois public policy makers should evaluate regulatory policies as to their effectiveness and impact on the dairy industry, as well as the livestock industry in general.”

“Our state continues to wrestle with exactly why the livestock industry has been experiencing decline. With such an abundance of natural resources, the reasons are difficult to explain,” said Nels Kasey, C-FAR research chair. “The results of this study should prove very valuable in launching initiatives to reinvigorate our state’s important dairy industry.”

Further details can be found on the Illini Dairy Net website at www.traill.uic.edu/livestock/siu.
**Wind Studied as Possible Energy Source for Illinois**

Illinois State University (ISU) researchers are studying wind as a possible energy source for Illinois residents. Douglas Kingman, assistant professor of agriculture, leads the effort and is joined by David Loomis, associate professor of economics, and David Kennell, assistant professor of technology. This interdisciplinary research team is addressing wind energy issues in areas including research, education, and government policy. Funding sources for the project include the Illinois Council on Food and Agricultural Research, Illinois Clean Energy Community Foundation, NEC-Micon, Inc. (Vestas), Corn Belt Electrical Cooperative, ISU College of Applied Science and Technology, and ISU Department of Agriculture.

"Wind energy has recently become a popular form of supplying energy across the nation and has great potential in Illinois," said Kingman.

In order to measure and evaluate the wind resource at the ISU Farm at Lexington, a free standing, 80m-tall meteorological tower was erected near the proposed site for a 1.65MW wind energy generator. Four anemometers that measure wind velocity, three wind vanes that indicate wind direction, a temperature sensor, and an instrument to measure barometric pressure operate continuously and sample climatic conditions at the farm. A data logger, cell phone, and solar voltaic cell power system are located at the base of the tower. Each morning, an email that consists of 24 hours of climatic data is sent from the tower to the research team for evaluation.

The tower is believed to be the only hub-height tower that is collecting data for distribution to the public. “Early summaries of the data by our research team and meteorologists associated with the turbine manufacturer have indicated the wind resource is better than previously anticipated,” said Kingman. “Production output from a turbine at the farm would be higher than projections based on wind data from sources like National Renewable Energy Laboratory maps and local airports.”

**Working Group Leaders Convene**

In late-May, chairs and vice chairs of C-FAR’s five working groups met at GROWMARK, Inc., headquarters in Bloomington for a “learning and sharing meeting.” Charged with providing leadership for C-FAR members with diverse interests and backgrounds during working group meetings, the working group leaders met to discuss how best to engage all members in a meaningful way. With the working groups being the foundation of C-FAR, providing the most appropriate environment for members to share their valuable “in the field” knowledge and expertise is paramount.

During the meeting, working group leaders discussed their roles and responsibilities, feedback from members via recent surveys, and the research proposal review process for the External Competitive Grants Program. They also reviewed key sections of the current member handbook and engaged in discussions of how to be most effective in leading working group meetings. “I felt the meeting was informative and very beneficial for me,” said Jim Charlesworth, chair of the Expanding Agricultural Markets working group.

“I intentionally called the working group leaders time together a ‘learning and sharing meeting’ as I very much appreciate the fact that leaders must first be knowledgeable of the organization,” said Kraig Wagenecht, executive administrator. “Secondly, the professional experiences that each of these leaders bring to the table is vast, and being able to share ideas was a rich component of the meeting’s discussion.”
Bailey Appointed Chair of WIU Agriculture Department

William Bailey has been appointed as chair of Western Illinois University’s Agriculture Department and began serving in this capacity on July 18. He “takes the reins” from Andy Baker, who served as the department’s interim chair since 2003 and has been actively engaged in C-FAR in support of the university’s agricultural research program. Baker returns to a full-time faculty position at the university. “The state’s research community is obviously a key C-FAR partner, and we place a high priority on working with the leaders from these institutions,” said Alan Puzey, C-FAR chairman. “Our thanks to Dr. Baker for his great cooperation, and we look forward to the same type of partnership with Dr. Bailey.”

Bailey comes to WIU from Massey University in New Zealand where he served as professor and chair of agribusiness since 1993. Prior to being at Massey University, he was vice president and director of research at World Perspective, Inc., in Washington, D.C. Bailey has also served as deputy undersecretary of agriculture for international affairs and community programs, as deputy vice president of the Commodity Credit Corp., and as Chief Economist for the U.S. Senate Committee on Agriculture, Nutrition, and Forestry. He has been a consultant for the USDA, the New Zealand Dairy Board, Southland Federated Farmers, and the Iowa State Soybean Association and has done international consulting in a number of Asian and European countries.

“Dr. Bailey was selected from an impressive list of applicants following a national search,” said Fred Ebeid, dean of WIU’s College of Business and Technology. “His extensive experience and knowledge will allow him to lead this department effectively and continue its commitment of academic excellence.”

Bailey earned his bachelor’s and master’s degrees at the University of Idaho. He earned a second master’s degree at Pepperdine University and his doctorate in agricultural economics from the University of Missouri.

“I am pleased to have the opportunity to become part of Western Illinois University’s strong agricultural tradition and to provide leadership for the department. I look forward to building on the excellent relationship that exists between C-FAR and Western Illinois. And, since I am originally from Winchester, Illinois, this is a chance to return to my roots,” said Bailey.

Websites to Watch

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Calendar
2005–2006

August 23  Semi-Annual Meeting (Northfield Inn, Suites & Conference Center, Springfield)
September 7  Board of Directors Meeting (Carbondale)
November 9  Board of Directors Meeting
January  Board of Directors Meeting
February  Annual Meeting (Springfield)

Please call the C-FAR office or check the calendar on the C-FAR website at www.ilcfar.org for further details.