

ProductCentral

News and advice from the MSU Product Center.

July 2010 Edition

RECENT ACHEIVEMENTS

Center staff with USDA Rural Cooperative Grant funds assisted in the creation and launch of the Michigan Cheese Makers Cooperative in May. They can be found at www.greatlakesgreatcheese.com.

In July, Chris Peterson was awarded the 2010 IAMA Fellows Award for his outstanding and sustained contributions to the organization, and as a demonstrated leader in the food and agribusiness industry.



Chris Peterson pictured with Dr. Bill Gorman and Laszlo Vajda, Director of the Hungarian Ministry.

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MARK YOUR CALENDAR NOW FOR AN EXTRAORDINARY OPPORTUNITY!

Chris Peterson

Director, MSU Product Center



The 4th of July is just behind us and plans for the remainder of summer are likely preoccupying many of you right now. So talking about an event in October may not seem like a high priority, but you need to mark your calendar right now so you don't miss an extraordinary opportunity to learn and network for the success of your business venture. October 26 is the Product Center's third annual conference, Making It In Michigan. We design the conference with budding entrepreneurs in mind—a premiere tradeshow that will feature a 130 venders of Michigan specialty food products (double last year's number!), a keynote address from a nationally renowned expert on consumer food trends, and multiple education sessions with direct relevance to making your food business much more successful.

For any of you thinking about starting a business the tradeshow is a very special opportunity to see how food businesses present themselves to the public and to grocery and other critical buyers that circulate through the show during the day. Taste and experience the products, peruse the excellent marketing materials, and talk with the venders—a practical education in its own right.

Our keynote speaker is Harvey Hartman, founder, chairman and CEO of the Hartman Group, Inc. For those of you not familiar with their work, his group specializes in identifying consumer attitudes and behaviors that matter most in innovation, brands and strategic marketing. He is a dynamic speaker who will leave you enlightened and energized.

The educational sessions this year again bring together leading Michigan experts to help guide you through starting your business in the following areas:

- Working with co-packers
- Validating and refining your business concept
- Food safety issues in the dairy, meat, bakery and beverage areas
- Product development, launch marketing and the internet

Yes, this is an extraordinary event. All this for the amazing low registration fee of not \$500 or even \$100, but just \$60! Mark your calendar and even register now at www.makingitinmichigan.msu.edu.

Do one final thing. Think about friends and neighbors who might benefit from knowing more about becoming an entrepreneur. Pass this opportunity on to them. We all need to work together to strengthen Michigan's economy. You and those in your network can all help Michigan while helping yourselves at the same time.

See you at the Making It In Michigan Conference, October 26, Lansing Center! By the way, have a great summer too!

THIRD PARTY CERTIFICATION: FOOD SUPPLIER AND CONSUMER PERCEPTIONS

In recent years, there has been an increasing concern about food safety. In response to consumer demand for higher levels of food safety, this area has received considerable attention from researchers, public organizations and food suppliers. An increasing number of food establishments including food retailers, distributors and food service providers are now requesting that their suppliers become certified to meet food safety and other standards. This growing demand for the production and supply of safe food has led to the development stricter food safety standards, benchmarks and specifications.

In particular the field of third party certification is becoming one of the key tools, and the last few years have witnessed the emergence and growth of different third party certification programs. Some of these programs have garnered government support and a growing global interest as one way to help ensure food products meet food safety standards as they pass through supply chain. The practice is believed to move the supply chain towards the production and supply of safe food and create a sustainable food system by providing incentives to food producers and suppliers. Despite these developments, there is still lack of adequate knowledge and information regarding supply chain and consumer perceptions and attitudes towards food safety related third party certifications.

The MSU Product Center is currently conducting a study sponsored by DNV (Det Norske Veritas USA, Inc.) to gain better insights into the supply chain and consumer perception and attitude towards food safety systems and practices. The study particularly focuses on identifying and assessing food supplier (manufacturer, distributor, wholesaler, and retailer) and end consumer knowledge, attitudes and practices related to third party certification. The study included surveys and interviews with consumers and food suppliers.

Preliminary findings indicate that consumers are highly aware of food safety issues and have a high recognition of third party certification as an effective signal of food safety assurance. Over a third of consumers are willing to pay a premium for third party food safety certification. Food suppliers and consumers are also changing their food purchasing practices for food safety reasons. Food suppliers view food safety as one of the key business related risks, and producers and manufacturers are seen as key supply chain actors to assure food safety through the supply chain. These certification programs are being introduced and implemented primarily to gain consumer trust and reputation. The report from the study will be available in the coming months.

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Getachew Abatekassa
Product Market Analyst
MSU Product Center



PENDING LEGISLATION WILL MAKE IT EASIER TO START HOME BASED BUSINESSES

House Bills 5280 and 5837 will exempt “cottage food” operations from the licensing and inspection requirements in the current Food Law. In the bills as introduced, a cottage food business is defined as a person who produces or packages a “non-potentially hazardous food”. These food items include but are not limited to “baked goods, jams, jellies, candy, snack food, cereal, granola, dry mixes, vinegar, and dried herbs.” However, “home-canned low-acid or acidified vegetables, home-canned salsa, or home-canned food, food service items, ready to eat meals, meat, sandwiches, cheese, custard pies, garlic in oil, food that requires temperature control for safety, and bottled water, home produced ice products and other beverages and products” are not exempt. Furthermore, labeling, adulteration and other requirements in the Food Law remain binding.

There are other limitations to the exemption. The food item must have a label that has the following statement on it: “Made in a Home Kitchen that has not been inspected by the Michigan Department of Agriculture”. Locations for sales are limited to “homes, farm markets or roadside stands, county fairs, and town celebrations festivals and

events”. Sales at craft shows, flea markets or over the internet are expressly prohibited. Also, the exemption does not affect other state and federal laws or local ordinances.

The maximum amount of gross sales for these products is set at \$15,000. This bill is geared primarily for hobby operations and producers that are in the early stages of commercialization. If the firm is successful and sales increase beyond the \$15,000 level, then the inspection and licensing requirements will need to be met.

The bills have recently been signed into law and have been given immediate effect.

Bill Knudson
Product Marketing Economist
MSU Product Center



UPCOMING EVENTS

- July 28-29— The Institute for Food Laws & Regulations will be holding a two-day U.S. Food Labeling Workshop. There are a few scholarships available for Michigan residents and business that have an economic need. Please telephone Mary Anne Verleger at 517-355-8295 or go to <http://www.iflr.msu.edu/label.html> for additional information on this event.
- October 19-20 -- MSU Food Science and Human Nutrition Department will be offering their Better Process Control School - Acidified Products. This will be held on campus in Anthony Hall. Please contact Linda Young at 517-355-8474, x 114 or at youngli@msu.edu for additional information on this event.
- October 26 -- MSU Product Center will be holding their Making It In Michigan conference and Marketplace trade show at the Lansing Center. Please telephone Greta McKinnney at 517-353-7185 for additional information on this event or go to www.makingitinmichigan.msu.edu for further details.

EMULSIFIERS' ROLE IN FOOD STABILIZATION- PART I

Previous articles have discussed ways to help stabilize foods. Commercial starches and gums help to extend shelf life of foods, preventing or slowing down some chemical and physical changes that naturally occur with stored food. Another group of ingredients that work to stabilize two otherwise immiscible substances are called "emulsifiers." In other words, emulsifiers are the ingredients that make it possible to keep an ingredient like oil suspended in an ingredient like water. To better understand emulsifiers, some background information will be necessary.

An old adage exists claiming that oil and water do not mix. This may be the case, but when emulsifiers are used, the job becomes much easier.

Immiscible Substances

Oil and water are not the only two foods that will not readily mix. The failure of two foods to form a uniform mixture is a problem based on polarity or mild electrical charge differences on molecules. This mild charge will cause polar compounds to be attracted to other polar compounds in a phenomenon that could be likened to the attraction of one magnet to another. While the polar compounds come together due to their mutual attractions, non-polar compounds are repelling polar compounds and collecting in a separate phase or layer.

Now go back to the example of oil and water. Water is the polar component in this mixture and oil is the non-polar phase that is left when water separates out from forces of attraction. When equal parts of oil and water are mixed, the tendency of the phases to separate can be temporarily overcome by mechanical force. This means that vigorous shaking and mixing will create a seemingly well-mixed solution. Since there is no force to keep water (polar) from attracting more water, the phases will eventually separate out.

Most food products are primarily made up of water plus other components such as carbohydrates, fats and proteins. Some products such as dressings primarily have water or

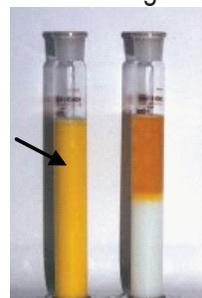
ingredients that are primarily made up of water, such as vinegar or lemon juice plus oil. Until there is interference in a polar (water) substance's ability to attract other charged molecules, the emulsion will lack any long term stability. The water and oil phases will separate out unless an emulsifier is added to keep the two phases together in what is referred to as an emulsion.

What is an Emulsifier?

Emulsifiers are unique chemical compounds that possess the ability to mix with both the polar and non-polar components of a food. This is accomplished through a chemical structure that has the ability to both attract polar compounds and associate with other non-polar components. Emulsifiers often have two distinct ends, one end is polar with a non-polar end opposite.

Since the emulsifiers are similar to both a polar and non-polar compound, they act as a type of bridge between two phases that normally would not stay together. The proximity of polar and non-polar compounds to one another with the use of an emulsifier makes for a fairly uniform distribution of both phases. Additionally, the ability of the emulsifier to interact continuously with both phases provides relative stability to an otherwise unstable mixture.

Emulsifiers are often lipids (nonpolar) with some sort of polar or water loving region. Some food gums, however, are able to perform these tasks, through different mechanisms, not all food gums are emulsifiers.



The next article will provide examples of emulsifiers naturally found in foods and those used as added ingredients to foods.

Left: two layers emulsified; Right: two separate layers.

Janice Harte, PhD
Food Product Development Specialist
and Nicole Goldman



PART II - FORMULA'S SET.....WHAT'S NEXT?

Now that you have accomplished commercializing your food product's recipe, you are ready to decide on the container for storing your product. A product's package serves many important functions. This overview will identify the key functions that should be addressed when selecting a container for storing your food product.

When thinking of a package, its obvious function is to protect and not allow the product to spill after processing. However, the product's packaging provides many more valuable purposes. The first area for consideration is the product's recipe and processing procedure. This protocol as established for its' food safety, will dictate the type of packaging material and its closure. If your product will require a hot fill for shelf-stable storage, glass containers historically are chosen, but many types of plastics can tolerate a hot fill and are becoming more popular and common. Typical closures for either container are screw tops. If the product will require additional thermal cooking (retort), steel cans are another option. If your product is a combination of freshly prepared ingredients and stored in the refrigerator, your packaging choices will likely be plastic, instead of glass. Refrigerated glass products are a breakage-risk, expensive and not consumer-friendly. There are a wide range of plastic materials that can be selected. For perishable food products which are not stored in the refrigerator, like bakery items, plastic is often used, either hard (formed shapes eg..clam shell, tub, etc,) or bags. Paper board, with or without lamination (for maximum product shelf-life) are additional choices. If the product is not perishable and not hot filled, but shelf-stable, it is likely that you will need to create a barrier to moisture and oxygen as a function of the packaging material; plastic and glass containers are appropriate choices. Sometimes, additional packaging assistance is provided by creating a vacuum or adding a variety of chemical gases (nitrogen-flush) to aid in maintaining product quality and shelf-life. Special attention will also need to be given to the type of plastic material and closure. Food examples for this group of food products include nuts, granola, pasta, salty snacks, and candy. For frozen products, packaging material will need to be able to tolerate the cold temperature, plus barrier to moisture during temperature fluctuations. Typically, frozen food products are paperboard which has been laminated, to create a moisture barrier.

The packaging material can also influence the shelf - life of the product. As referenced casually above, packaging has the ability to aid in either maintaining or increase the self - life of a food product. The properties which are considered to assist with shelf-life include barrier to oxygen and moisture and the addition of or exclusion of certain chemical gases. These properties should be evaluated individually as related to the product's recipe, process, packaging material and shape considerations.

The product's package also functions as the product's "marketing presence". The look and style of the container provides the foundation for other critical elements to the product: branding, label and Nutrition Facts. The product label informs the consumer of what the product is, how it is to be used, its' ingredients and nutritional composition, plus manufacturing and purchase information. Therefore, the selection of your package will need to include an appropriate amount of surface area to incorporate this information in combination with the products unique branding image. (Be aware there are also food product labeling regulations that apply here and have been previously discussed in earlier newsletter articles.)

In reviewing all these critical functions of the package, price per unit is typically the self-directing factor for making the final package decision, next to shelf-life. Maximum shelf-life may be provided, but at the extended cost of material(s), process and equipment to accomplish this. Obtain price quotes from a number of suppliers, once your product's packaging specifications options have been identified. Often a realistic compromise is needed amongst product's shelf-life, equipment, material and marketing style to match product concept.

Lastly, the selection of the package can be as important as whether the consumer would notice the product or not and being purchased or not. Remember the product package is more than just a container to store it in!

Dianne K. Novak, RD, MS
Specialized Services Consultant
MSU Product Center



THE GOOD AND BAD OF MICHIGAN'S BIODIESEL INDUSTRY

One of the key characteristics of successful business is to have the vision to have the right product at the right place at the right time. This also holds true for the entrepreneurs who have a passion to develop products, such as biodiesel, in the bioeconomy sector. As with any start up of a product or new business the risks are high and dynamic and force the entrepreneur to be on his or her toes to closely monitor the environment and react quickly to unexpected turns of events that could adversely affect well thought out business plans. Failure to do so most certainly ends in failure. There are numerous examples of entrepreneurs making mid-stream adjustments to survive unforeseen changes and coming out all the better because of the change. There is an essence of change for the better in Michigan's biodiesel history.

In a recent article in this newsletter I wrote about an effort to establish canola as a cash crop in northern lower Michigan. The genesis of the effort goes back to the 2005-8 era where the desire to commercially produce bio-diesel as a substitute for petroleum diesel became a reality. The biodiesel feedstock of choice was canola seed because of its very high oil content; it was not raised as a food crop in Michigan, and was relatively inexpensive to grow on marginal land.

Canola is a variety of rapeseed that was developed in Canada that tolerates marginal soil, has a short growing season, and likes a cool weather. Canola would not compete with corn and soy bean acreage and could be grown on the 600,000 acres of fallow land north of Cadillac.

Another factor in favor of producing biodiesel from canola was the price of crude oil was gradually rising, as was the price of petroleum diesel, which modeled out to the price of biodiesel could compete with the price of petroleum diesel. Given all of the favorable circumstances farmers started raising canola, investors began building biodiesel plants, and the public was told that soon they would be driving their



diesel engine vehicles running on biodiesel. Everything was going great until the crash of 2008 with crude oil prices dropped from \$150/barrel to \$40/barrel and everything quickly ground to a halt. Everyone involved was left holding the bag, so to speak. Farmers had crops of canola in cultivation and were faced without a market to sell the canola to, because the cost of petroleum diesel had dropped from \$4.50/gallon to \$2.50/gallon and the biodiesel plants could not compete on price.

The entrepreneur canola farmers and biodiesel producers immediately went into survival mode. Fortunately the first years of canola production was limited to about 150 acres. Some of the crop was used to make biodiesel at MSU and the balance was sold – at a surprisingly favorable price - to ADM in Canada who processes canola oil for

food. It turns out that canola oil is high in oleic acid which is becoming an increasing sought after ingredient in health and healthy foods. Realizing that the failure of canola as a feedstock for biodiesel had become an opportunity to continue their efforts to farm canola as a cash crop, the canola farmers were again motivated. Canola varieties were researched to identify the varieties that had the highest yields of high oleic acid oil. Last year just under 500

THE GOOD AND BAD OF MICHIGAN'S BIODIESEL INDUSTRY (Continued from Page 6)

acres of canola were harvested yielding an average of 43 bushels per acre that was sold to ADM in Canada for an average market price of \$8.40/bushel. This year about 1,000 acres of canola have been planted with an expected yield of 60-70 bushels per acre which they hope to sell in the \$8.50/bushel range. As yields continue to improve, canola will soon be competitive with corn and soy on a revenue per acre basis. This is a great example of entrepreneurs making mid-stream changes to survive unforeseen changes and coming out all the better because of recognizing and taking advantage of the opportunity that change can bring.

Michigan's five biodiesel producers are also survivors but have gone through some hard times and their future is just now looking brighter. After the crash of 2008 they all stopped producing biodiesel and began looking for other opportunities to use their bio-refinery capacity to produce products and keep their doors open. Some started refining glycerin into "green soaps" for the beauty industry and others remained idle. Two of the five plants went chapter 7 and were sold and one has now reopened under new ownership.

In 2009 the federal government instituted mandatory blending requirements for biodiesel with diesel and introduced tax incentives to motivate biodiesel producers. Producers qualified for a \$0.50/gal tax credit and blenders qualified for a \$0.55/gal tax credit. The combination of the demand created by the mandatory blending requirements and the tax incentives allowed the remaining four Michigan biodiesel producers to survive by producing a limited amount of biodiesel, but nowhere near the capacity of the plants. The

cost of feedstock continues to be a major barrier to the producers running at full capacity. The tax incentives expired in February of 2010 and are expected to be renewed when congress reconvenes from its summer recesses. If crude oil prices remain high and the incentives are not renewed as expected Michigan's biodiesel producers could go idle again.

The good news on the horizon for Michigan's biodiesel producers is that they have potentially identified a new low cost feedstock and catalytic agents that will allow them to again compete with diesel from a price prospective. The new feed stock is penny crest, a common easy to grow weed that has a very high oil content and has no value for food. Test planting of pennycress are in progress and if yields are as expected penny crest will easily replace canola as the feedstock for biodiesel. In addition to the cost of feedstock, the cost of the catalytic agent that converts seed oil to biodiesel is expensive and must be replaced frequently and is a significant factor in the cost of producing biodiesel. Over the last two years considerable attention has been given to the development of lower cost, longer lasting catalytic agents. The new catalytic agents are now available and if penny crest proves to be a viable feed stock Michigan's biodiesel producers will be running at full capacity within the next two years demonstrating that the determination and ability of Michigan's biodiesel producers to take advantage of unforeseen changes will in the long run benefit them.

Ruben Derderian
Associate Director Bioeconomy
MSU Product Center



Information. Networking. Inspiration.



MICHIGAN'S PREMIERE SPECIALTY FOOD TRADE SHOW & CONFERENCE

Register today to get the information you need to 'Make it in Michigan.'

Tuesday, October 26, 2010
Lansing Center, Lansing, Mich.

\$60 - includes breakfast, lunch, and educational sessions

\$75 after October 16, 2010



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Visit makingitinmichigan.msu.edu for more information and to register today!

Wednesday, October 26, 2010
Lansing Center, Lansing, Mich.

Are you ready to be the next great entrepreneur? Are you an existing business looking for help with the next great product? Then this day is for you!

This full and exciting event brings you all the resources and networking you'll need to bring your dreams and goals to reality. Come meet the Product Center team. Network with buyers from stores looking for exciting new products. Learn from the experts about launching or expanding your business through educational classes that prepare you for the road ahead in regulations, safety, production, marketing and distribution. This is the one day that every entrepreneur, producer, buyer and processor in food and agricultural businesses needs to attend.

INFORMATION

- Product development
- Marketing considerations
- Food safety regulations
- Regulatory Issues

NETWORKING

- Product buyers
- Business consultants
- Fellow entrepreneurs
- University liaisons
- Regulatory officials

INSPIRATION

- On-site Product Center counseling
- Keynote Speaker - world renowned Harvey Hartman, Founder, Chairman & CEO of the Hartman Group, Inc.
- Success stories
- Entrepreneurial awards
- Product showcase

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