

## Ask the Experts



### Product Center's Funding Renewed for

**5 More Years!** - On March 1, 2002, the Product Center was created for an initial five year life through a memorandum of understanding between the MSU College of Agriculture and Natural Resources, the Michigan Agricultural Experiment Station, and MSU Extension. The basic funding for our food, agricultural and natural resource program continues to be provided by Project GREEN (a collaborative effort by plant-based commodities and businesses in cooperation with MSU to advance Michigan's economy through its plant-based agriculture). [Click Here](#)



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# If Interest Rates are so Low Why Can't I get a Loan?

By: Bill Knudson

The current recession coupled with policies pursued by the Federal Reserve Bank (the Fed), has kept interest rates low. For example the Fed will begin buying up to \$300 billion in government debt which will increase the money supply and keep interest rates low. However, the current financial situation will make getting credit more difficult not easier.

The meltdown in the housing market, declines in the stock markets and other assets values, as well as bank failures have made obtaining loans more difficult. That is the bad news. The good news is that if you are a good credit risk, the interest rate may be lower.

The question then is what can an entrepreneur do to maximize his or her chances of getting a loan? The first thing that will increase the chance of getting a loan is to increase the level of capital the entrepreneur is willing to put into the project. This will reduce the amount of risk faced by the bank. Unfortunately, this does increase the level of risk faced by the entrepreneur. One way to reduce this is to look for alternative sources such as adding a silent partner or working with family members. Another alternative is to pursue grants or loan guarantees that would reduce the level of risk borne by a bank. However, the competition for grants and loan guarantees is increasing.

Another way to improve the chances of obtaining a loan is by having good documentation to support your loan application. Examples

would include a good business plan, good marketing analysis including trends and an understanding of your market area, and complete financial statements including income statements and balance sheets. The Product Center can assist you in developing good documentation.

One thing that needs to be stressed is that this more restrictive credit environment is actually more like the historical average. The past few years have been an era of easy credit. The momentum is swinging back to the lending environment before the first part of this decade. One thing that never changes is the fact that banks lend money to those that need it the least. If an entrepreneur can minimize his or her need for lending and maximize its probability to pay the loan off, he or she is more likely to get financing. [Return to Top](#)



# A Product's pH Value - What's the Connection to Food Safety?

By Dianne K. Novak, RD, MS

Food safety and food preservation are synonymous; to do one without acknowledging the other would be a dangerous approach in processing food products. Home canning is often the picture we imagine when thinking of food preservation and is the humble beginning of many new food products by entrepreneurs. However, to take this food product to the next level of being commercially sold, does require a food safety evaluation. Checking the pH value of the prepared (shelf-stable) product should be your first step.

Performing a pH test on the shelf-stable food product is important for determining its Botulism-risk. This food pathogen is at the top of the list for monitoring, because of the deadly toxin the bacteria's spore can produce. Shelf-stable foods, where no oxygen is present, are the perfect environment for the *C. Botulinum* spore to produce its' toxin. A low pH is one control in a shelf-stable food that can prevent the deadly toxin from forming. Therefore, proper controls need to be in place both in processing and formula development to keep the Botulism-risk low. Knowing the pH value of your product will assist in evaluating the safety of the food product and determining its risk of developing Botulism.

The pH value of a food is the direct function of the free hydrogen ions present in that food. Acid present in foods release these hydrogen ions, which give its sour taste.



pH can then be defined as a measure of free acidity. As the concentration of hydrogen ions decrease, the pH of the food increases (a low-acid food). A low-acid food is often referred to as “basic” or “alkaline”, and has a pH greater than 7. A pH equal to 7 is considered Neutral (water), while a pH less than 7 is Acidic.

The pH result of the shelf-stable product will be a value in the range of 0 to 14. The pH test should be done using a pH meter and on a food sample which has rested 24hours after processing, plus at room temperature. If product has many particulates, a pureed sample will provide the best evaluation. The Product Center routinely performs this test and is offered as a service for a fee of \$25 per sample.

Based on the result of the pH test, the shelf-stable product is provided an initial food processing classification. The food processing classifications include formulated acid (naturally acid), acidified and low-acid. Scientific investigation has found that *C. Botulinum* spores will not germinate and grow in food below a pH of 4.8. A pH of 4.6 has been selected as the dividing line between acid and low-acid foods.



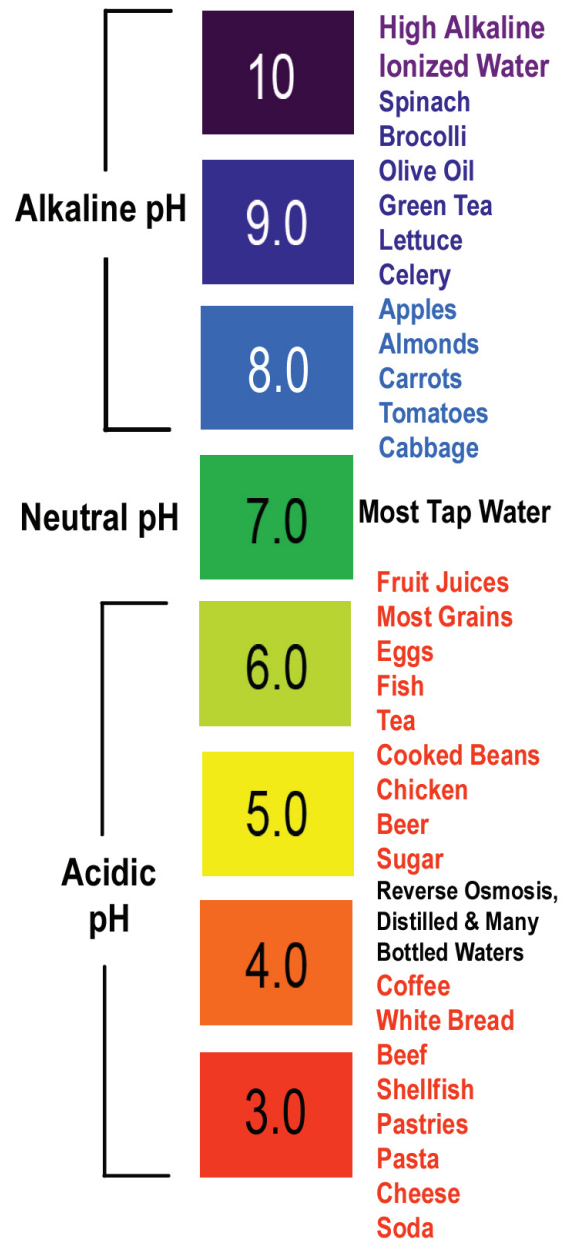
## pH Level & Food Safety (Continued from page 3)

Therefore, all products with a pH greater than 4.6 are low-acid, while acid foods have a pH lower than 4.6. A third classification is “acidified foods,” which are defined as low-acid foods to which acid or acid foods are added to produce a product that has a finished equilibrium pH of 4.6 or below and a water activity greater than 0.85.

From a food product licensing and regulatory standpoint, the pH of the product is required. Also, all low-acid and acidified foods require Food and Drug Administration registration and a process schedule. To accomplish this registration, you are required to have your product reviewed by a Process Authority. At the Product Center, we have this expert who can perform a Processing Authority Evaluation on your shelf-stable product. This evaluation will involve incorporating the pH value of your product, in addition to a formula and processing review. In some instances, other analytical tests will be performed to finalize the food processing classification. The fee for the Process Authority Evaluation is based on the product’s food processing classification. To learn more, contact your Innovation Counselor for a referral to Specialized Services at the Product Center.

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### Rejuvenator Water Ionizer pH Chart



# Consumer Trends to Watch

By Getachew Abatekassa

In the past three years, nearly 400,000 new food and beverage products have been introduced worldwide. According to Mintel consumer report, *freshness*, *functionality*, *simplicity*, *sustainability* and *extreme specificity* are some of the key consumer trends that will affect new product developments and introductions in the coming years.

*Freshness* affects a variety of food and beverage ingredients and preparations, and many food products are now coming with claims related to freshness. Freshness is mostly associated with better taste and health perceptions. Products coming with such claims include soups, dessert, side dishes, salads, and alcoholic beverages with added fresh fruits. Freshness is also becoming one of the key factors in restaurant menu and concept development.

*Functionality* is mostly associated with product packaging focusing on convenience (time savings and portability) and customization or personalization of the product's use. Some packages are now designed to provide consumers more post-purchase choices allowing them to customize or change the product based on their needs and tastes (e.g., customizable seasoning, spice, dressing, noodles, snacks and prepared meals) or to easily mix products from separate packages of ingredients (e.g., meal kits, soup products with a separate herb mix, drinks and confectionary products).

*Simplicity* is related to purity of ingredients (e.g., organic, natural and inherently good contents) and ease of use. Other developments in this area include clean labeling (e.g., simple communication of health and environmental

benefits). There is a move towards more natural, simple and unadulterated food products. Manufacturers are thus focusing on simplifying and purifying their product contents and communication to the consumer through simple and easy-to-understand ingredient statements and labels on packages.

Due to concerns of an increasing number of consumers about the environment, *sustainability* is becoming one of the key trends that affect product positioning. Food and beverage manufacturers are now increasingly trying to understand sustainability and find new ways to incorporate it in the food manufacturing process. In the food and beverage sector, sustainability innovations are currently focused on eco-friendly formulations, environmentally-friendly and bio-degradable packaging and carbon labeling.

*Extreme specificity* is the new trend on products that are positioned for specific lifestyle needs and targeted benefits (e.g., energy drinks for golfers). Most products focus on specific health benefits, lifestyle factors and demographics leading to further market segmentation. In the coming years, we may also see an increasing number of new food and beverage products with claims related to beauty benefits including skin health and anti-aging.

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# How to Calculate a Price Markup

By Matt Birbeck

So you've spent all winter creating and developing new products for the Michigan 2009 retail season. Dusting off shelves and inflating tires on the truck, you've got one last task before going to market and raking in the money.

Turning a profit is paramount when running a business. In order to make a profit, you need to correctly calculate a markup on the price you are going to charge for goods or services. Determine what price markup to charge for your product or service by following these steps:

## Step 1

Determine your product/service cost. How much did it cost you? As an example, let's assume the product cost is \$1.40.

## Step 2

Determine the percentage markup you wish to apply. Research your industry to apply a markup that will be competitive. In this example, we will use 30 percent.

## Step 3

Convert the percentage markup to a decimal. In this case, a 30 percent markup would translate to 0.30 (30 divided by 100).

## Step 4

Subtract the decimal in STEP 3 from 1. In this example, 1 minus 0.30 equals 0.70.



## Step 5

Compute the total selling price by taking the cost from STEP 1 and dividing it by the result from STEP 4. In this example, \$1.40 is divided by 0.70. The result is \$2.00, which should be the total selling price.

## Step 6

Calculate the price markup by subtracting the product cost from the selling price. In this example, the \$2.00 selling price minus the \$1.40 product cost gives you a price markup of \$0.60.

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# Granger - A Forward Looking Alternative Energy & Green Company

By: Ruben Derderian

Granger (Lansing, MI) has come a long way from its start in waste collection to being an excellent example of a new wave of bioeconomy firms.

Granger was founded as a container service company in 1966 that provided complete solid waste and recyclable material collection for industrial, commercial, apartment, construction, and residential customers. In 1973 Granger expanded its business to include a landfill to accommodate its refuse collection.

Granger further expanded its business to include the independent collection of glass and later paper for recycling. In 1989 the company completed a 50,000 square foot recycling area which includes a 16,000 square foot building located on the north side of Lansing. At that location a variety of paper, plastics, glass, tin cans, aluminum and newspaper are processed into marketable form. The center accepts source separated material from commercial and residential customers. Currently this facility processes 50-70 tons of recyclable materials daily.

Granger's latest endeavor is in the area of renewable energy where it has become an industry leader in the field of alternative energy resources specializing in the development of electrical power plants at landfills. Today's landfills have little relation to the "dumps" of the past. In recent years Granger has led the way to vast improvements in terms of engineering, construction and environmental safety. Granger began its first landfill gas recovery project in 1985 in Lansing, Michigan. This project supplied landfill gas from a closed landfill to a nearby industrial plant. This was the first landfill gas project in Michigan.

Gas is a natural by-product of landfills and has two basic uses, industrial fuel and electrical energy production. A mixture of gas is produced by the natural biological breakdown of organic materials deposited in landfills. Approximately 50% of the gas produced is methane gas that can be recovered, processed and used as an alternative to natural gas – either by powering industrial applications directly or as a fuel to generate electricity.

The Lansing landfill produces approximately 2,200 SCFM (standard cubic feet per minute) 365/24/7 of methane which is converted to approximately 8 Megawatts of electricity. In addition to the Lansing facility, Granger operates seven additional methane gas collection landfills in Michigan. It has the capacity to develop 30 Megawatts of renewable energy which could power 19,076 homes or remove air emissions equal to 250,155 vehicles or create air quality benefits equal to planting 356,471 acres of forest.

In summary Granger's innovative use of the otherwise problematic by-products of waste storage to create a renewable source of energy gives new meaning to the old phrase: "What's one man's trash is another man's treasure."

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# Food Gums

By Janice Harte, PhD  
and Eric Birmingham

What are food gums and what do they do? A food gum is typically a water-soluble carbohydrate that can come from natural sources such as land or marine plants, as well as from safe microorganisms. Cellulose based gums are derived from natural sources such as trees or plant materials. But they are not considered natural because of the processing needed to provide functionality.

Food gums typically work best in a water-based food system where they can be hydrated via the free water in the formula. They have the ability to contribute thickening power or gelling properties to foods. Also, they can be added to provide adhesiveness (e.g. sauce cling in a dip) or a creamier mouth feel. An additional benefit is the very small amounts that are needed for gums to function in foods. This can be helpful in formula fat reduction since gums can replace some functionality that fat normally provides in foods with significantly fewer calories.

There are several different types of food gums available. Some of the commonly used gums include: xanthan gum, guar gum, locust bean gum, carrageenan, gum arabic. Each gum has its own specific characteristics and applications in which it works best. For example, carrageenan reacts very strongly with some of the proteins in milk to thicken or form a gel. The strength of the gel is affected by the type and level of carrageenan used in a particular formulation. Xanthan gum is very commonly used in sauces and dressings because of its unique thickening, functionality over a wide

pH range, and gelling characteristics.

There are several different gum manufacturers in the food industry such as TIC Gums ([www.ticgums.com](http://www.ticgums.com)) and Danisco ([http://www.danisco.com/cms/connect/corporate/products%20and%20services/product%20range/gumsandsystems/gumsandsystems\\_en.htm](http://www.danisco.com/cms/connect/corporate/products%20and%20services/product%20range/gumsandsystems/gumsandsystems_en.htm)). They have large portfolios of food gums and gum systems that may be applicable to your product. In many systems food gums are combined with a modified food starch and may also be used with an emulsifier.

The MSU Product Center Specialized Services can offer help on a fee basis to work with ingredient manufacturers to get the right stabilizer for your food product. In following articles we will expand upon modified food starches and emulsifiers.

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## Renewal continued from page 1

Last year, the Product Center's life was extended one year to allow for a review of our performance. I am very happy to share with you that we have now been renewed for an additional five year term concluding on June 30, 2014. We are looking forward to serving many more entrepreneurial clients and expanding businesses over these next five years. It feels great to have a renewed lease on life!

We have much to be proud of as we look back on what we have accomplished in the first years of the center. We started serving clients in January 2004 and have now operated for five full years. To date, the accomplishments of the Product Center include the provision of counseling and technical services to a wide range of client projects including:

### SERVICES PROVIDED

SINCE 2004	IN 2008
Various educational programs <i>2,898 participants</i>	<i>313 participants</i>
One-on-one client counseling sessions <i>11,509 sessions</i>	<i>2,673 sessions</i>
Assisting with business concept development <i>1,094 clients</i>	<i>209 clients</i>
Assisting with venture fundamentals including initial business planning <i>754 clients</i>	<i>241 clients</i>
Providing specialized services including product testing, detailed marketing analysis, and feasibility studies <i>538 clients</i>	<i>267 clients</i>
Venture launches <i>127 ventures</i>	<i>29 ventures</i>

The Product Center activities have led to 127 known new businesses and business expansions. Economic impacts from these new businesses and expansions are estimated as

follows:

- Increased annual sales: \$193.6 million (cumulative first year sales only)
- Value of increased investment: \$201.3 million
- Jobs created: 606
- Jobs retained: 348

In addition to these activities, we have also researched and written a large number of marketing studies about various sectors of agriculture, food, and the bioeconomy. These can be found on our website ([www.productcenter.msu.edu](http://www.productcenter.msu.edu)). In addition, we have analyzed the impact of these sectors on Michigan's economic health. In one recent publication, we announced that the total 2007 economic impact (including direct and indirect) of Michigan's agri-food and agri-energy system is estimated to be \$71.3 billion, an increase of approximately \$7.6 billion or 11.9 percent from 2006. At least one sector of Michigan's economy is growing strong, and we very much enjoy serving this sector.

We could not have accomplished all that we have without the dedication of our campus staff, our innovation counselors and educators, our many campus-based faculty service providers, and our many external partners. It takes a well functioning network of many resources to assist in making entrepreneurs successful and growing existing businesses. To our staff and partners, thank you for all you've done. To our clients, thank you for the opportunity to work for you. At the end of day, our reward is seeing Michigan's economy grow and prosper. It's all about creating business innovation in agriculture, food, natural resources, and the bioeconomy.

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# Schedule of Upcoming Events and Resources

## Webinars

Good Agriculture Practices (GAPs) and Third Party Audits for  
The Fresh Produce Industry

USDA Value Added Producer Grant & Energy Programs

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## Acknowledgements

<b>Director</b>	Chris Peterson	<b>Product Marketing Economist</b>	Bill Knudson
<b>Associate Director</b>	Tom Kalchik	<b>Food Product Development Specialist</b>	Janice Harte
<b>Associate Director Bioeconomy</b>	Ruben Derderian	<b>Product Services Coordinator</b>	Dianne Novak
<b>Product Market Analyst</b>	Getachew Abate	<b>Editor</b>	Greta McKinney
<b>Supply Chain Specialist</b>	Matt Birbeck		