

UW Dairy Pipeline

Winter 1994 Vol. 6 No. 1

A Technical Resource for Dairy Manufacturers

Call to connect with CDR

The *Wisconsin* Center for Dairy Research is currently setting up an electronic "bulletin board" to communicate and share information more efficiently. Electronic bulletin boards serve the same purpose as the cork and thumbtack models, they are places to post current information. Your computer is the electronic connection that will display the bulletin board on your screen. Although it's not yet in place, the CDR bulletin board will be stored on a CDR computer and regularly updated. This is an evolving idea and will change over time as it adapts to user needs. The bulletin board will feature user-friendly menus to guide your search, we want it to be practical and useful for you.

To connect to the CDR bulletin board you'll need a computer and a modem, a relatively inexpensive tool that connects your computer to the telephone system. When you dial into the CDR bulletin board and connect with our computer you will essentially form a simple link, or network, and enter the "information age." The bulletin board will be free to users, but if your call isn't local you will have to pay long distance charges.

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Dear Reader,

Certainly 1994 will be a year that we will add some new buzz words to our vocabularies. Words like information highway, modems, CD ROM, cyberspace, email, internet are in the news almost daily as governments and businesses maneuver to make the most of the new communications infrastructure rapidly coming into focus.

Computers, and the mysterious highways that connect them, are opening up doors to information. In this issue of the *Pipeline*, Karen Paulus gives you a primer on the *Internet* which is the mega network which provides two key functions: rapid communications using Email on your computer and access to endless databases and software that can be downloaded to your own computer.

How will you use the tools of the information age in your business? Do you know enough about the technology to be able to answer that question?

CDR will be setting up some training workshops on these topics. If you are interested in attending a training workshop or setting up a one on one training appointment, please call me at 608/262-2217.


Sarah H. Quiñones

Listed below are a few of the agriculture sources available on the Internet.

List servers

Special interest mailing lists, or list servers, operate like a simultaneous chain letter allowing you to "subscribe" to the list and get all the messages sent to the list. Some listservers let you read messages, and place messages, without subscribing and receiving everything.

- ◆ Dairy-L is a discussion list focusing on dairy production issues. Topics include current problems and controversies, educational tools, software, and questions about the problems and policies in the dairy industry.
- ◆ Lactacid is the short name for the Lactic Acid Bacteria Forum. This discussion group is available for exchanging information about lactic acid bacteria, particularly concentrating on uses for human and animal health, food preservation, and animal feeds.

Bulletin Boards

Bulletin boards on the Internet function like the CDR bulletin board, essentially it's a place to read and leave information and messages. Internet offers it's wide-ranging audience access to thousands of bulletin boards. Some interesting ones include:

- ◆ ALF, or Agricultural Library Forum posts information about the National Library of Agriculture's projects, programs and services.
- ◆ PENpages is an information service that collects thousands of news articles, newsletters, fact sheets and reports. Agriculture is the focus, including everything from dairy science to rural development.


Sources: *Not Just Cows*, A guide to Internet/Bitnet Resources in Agriculture, 1993, by Wilfred Drew, State University of New York, Morrisville, New York.

The Internet Companion A Beginner's Guide to Global Networking by Tracy LaQuey, 1993.

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Initially, callers will have access to two basic features. The first is a series of "bulletins" that you can read or download to your own computer as an ASCII text file. You can import the files into any word processing program, or a DOS editor, and then print them. The second feature is an electronic mail "question and answer" feature that allows users to leave a question or a message for CDR staff or UW faculty. The bulletin board is an open format, so these questions, answers and messages are accessible to all viewers.

The CDR bulletin board number is (608) 265-2133. The board will be available for calls on Tuesdays and Thursdays from 2:00 PM till 7:00 AM starting March 1, 1994. If you call outside these hours you will reach CDR staff since this is also a voice line. We encourage you to call us at (608) 262-8015 or 262-2217 if you have any questions or problems with the bulletin board.

In the future, you'll be able to download software, like CHEESE-ECO or the new CHYIELD (See Resources) through the bulletin board. We also hope to post information from the Internet, a potential gold mine of resources. (See related Internet article.) 

CDR Bulletin Board Contents:

- ◆ Calendar of events
- ◆ Dairy Foods Researcher Directory
- ◆ UW Dairy Pipeline index of articles
- ◆ CDR current research project list
- ◆ CDR video catalog
- ◆ Directory of Dairy Research Centers
- ◆ Dairy Foods Extension Information

Do you need the "Net?"

Why complicate your life with computer networks? The simplest reason is that everyone else is jumping online and if you don't, you should at least know what you're missing. Businesses, small and large, are connecting to networks to seek and exchange information. Opinions about computer networks range from wildly enthusiastic to totally frustrated, with many folks reserving a wait and see attitude.

Described as an "online universe," an "information superhighway," and a "network of networks," Internet is the world's largest computer network — and it's growing. In fact, Internet ballooned from around 200 registered computers in 1981 to an estimated 20 million current users. Internet now reaches 60 countries worldwide.

What's on the Net?

Internet, or "the Net," is in demand because it allows millions of users the opportunity to communicate instantly. The second reason for the Net's popularity is access to valuable information. For example, would you like to check the FDA's food labeling regulations? You can find them on the Internet, along with the latest modifications. Missed the President's latest speech? It's online, too. Databases, library catalogues, and marketing statistics are all available. You can find agricultural information around the world when you search on the Internet, some enticing destinations include a file called "Technology Transfer Projects" from AgResearch in Upper Hutt, New Zealand. Or try reaching the Technet file in Singapore or the World Data Center on Microorganisms in Riken, Japan. It's all moments away on the Internet.

Businesses around the country are using the Internet. Scientists, librarians, teachers, and even elementary school students have connected to Internet in recent years. College students learn to navigate through this electronic web and then take their skills with them when they move into the world of work.

Evolution of Internet

Internet has evolved steadily, and sometimes

Commercial networks with full Internet access:

Delphi (800) 695-4005
The Well (415) 332-6106

Electronic mail plus other services and databases:

CompuServe (800) 848-8199
America Online (800) 827-6364

Other services:

Prodigy, internal E-mail only, (800) 776-3449
CICnet, Internet access only, (313) 998-6103

unpredictably, since its beginning in 1969. ARPANET, or "the mother of Internet," started as an experimental government network that linked scientists doing defense-related research to remote computer centers. The scientists were able to share hardware and software, including databases and disk space. Scientists also used the network to collaborate on projects and to "talk" to each other. "Talking" online became a surprisingly popular use of linked computers. By the late 1970's and early 80's other networks emerged (USENET and BITNET) and by 1991 the networks were linked, not only to each other but also with government supported super computers and the National Science Foundation's NSFNET. Commercial connections, which charge you access fees to connect with their computer to form a network, also started around this time since Internet access no longer required Federal sponsorship. Since then, the growth rate of computer networks has skyrocketed.

Connecting to computer networks

Just like the network itself, access to it continues to evolve. Historically, researchers and government offices were connected to Internet. More and more businesses, universities, and libraries have connected.

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The cost of Internet access is a limiting factor and even though more businesses are logging on, they are usually larger companies with many international customers. Individuals can sometimes save by signing on with a professional group, for example librarians and teachers can get Internet access through their professional organizations. Internet isn't "free" to universities either, the University of Wisconsin-Madison recently paid for hooking up all students and staff to Internet as part of an initiative to upgrade instructional technology.

Commercial online services are growing and expanding, some offer full access to Internet, but most limit their offer to E-mail connections, which travel through Internet via E-mail gateways. Commercial services also offer their own array of databases, investment advice, games, news, sports, and weather.

Electronic mail, or "E Mail"

For many people, electronic mail is the single most useful commodity that computer networks deliver. You can stop playing telephone tag and send and receive messages easily, quickly and, very often, inexpensively when you have E-mail access. Many E-mail users join "mailing lists" that allow them to participate in group "discussions." Thousands of groups exist, spanning topics from lactic acid to Zen Buddhism.


Network tools

Millions of people, around the world, have already plunged into the labyrinth of computer networks. Modems, which connect computers to the phone lines, are the keys to this new universe, (sometimes called cyberspace), and if you don't have one yet, perhaps it's time to get one. Other key tools for

connecting to any network include a computer, a phone line and the right software. Right now, most home modems are slow, limiting the rate of transfer. Signing on with a commercial network (Compuserve, and the rest) usually gets you a friendlier interface than Internet offers.

Shopping for services

It's wise to do some homework before shopping for a commercial network. Talk to other users, particularly the people you'll be communicating with most often. Will you be sending files through a network? Some services can only send files to users on the same service. Your location will influence the cost of network access since it may involve a long-distance connection, the largest commercial networks offer more local connections. Most services charge a basic membership fee, hourly charges for use, and sometimes extra charges for E-mail. Computer stores and catalogs are good sources of information.

Those in the know predict that Internet will become more commercial in the future, right now individual users not affiliated with a major university or government office sign on through a private company. Concern is rising that too many people using the network will overwhelm the system, or at the least, sending messages will slow to a frustrating pace. Veteran users already notice an increase in the number of "busy signals" or messages telling them to "try again later." Optimistic devotees of Internet just assume that "someone" will fix it, by developing new technology or adding more computing power. It's clear that more and more users depend on computer networks to meet their communication and information needs, and both users and information will only increase in the future. 

Help us help you! Please answer these survey questions—your answers will help to guide our use of computer networks.

To respond:
Phone: (608) 262-8015
Fax: (608) 262-1578
E-mail: Paulus@AHABS.WISC.EDU
Mail: CDR, 1605 Linden Dr.,
Madison, WI 53706

Do you use?:

- a computer at home?
- a computer at work?
- a computer network?
- a modem?

Will you use these in the future?:

- E-mail?
- Internet?
- CDR Bulletin Board?
- What would you like on the bulletin board?
- What types of information would you like on the CDR Bulletin Board?

Separating milkfat—will it open the market?

by Kerry E. Kaylegian, Associate Researcher, CDR

A research project to determine the commercial feasibility of milkfat fractionation in the U.S. is underway at the Center for Dairy Research. The goals of this project are: 1) to demonstrate the functional benefits of fractionated milkfat by developing prototype ingredients for industry evaluation; 2) to understand the potential market for milkfat fractions in the U.S.; and 3) to understand the production costs associated with these products. By separating milkfat into component fractions, we can improve the functionality of milkfat in applications that benefit from milkfat's flavor and natural image, but where its usage has been limited by functional incompatibilities.

The concept and technologies for milkfat fractionation are neither new nor highly technical. Commercial milkfat fractionation, has been successful in Europe since the mid-1970's, and is now succeeding in New Zealand. Applications for milkfat fractions in the dairy industry include ice cream, cheese, recombined dairy products, and cold-spreadable butter. The bakery industry uses fractions in pastries, cakes, cookies and the confectionery industry adds them to chocolate and confectionery fillings.

What is fractionation?

Milkfat fractionation is a physical process separating milkfat into various components or "fractions" based on crystallization and melting behaviors. It is a relatively simple process that involves no chemical or processing additives. Anhydrous milkfat (milkfat without water) is heated with agitation until it is fully melted and then cooled under controlled conditions. This produces solid and liquid milkfat phases that are easily separated using vacuum filtration or a membrane filter press. These separated fractions are ready for use as is, or blended other fractions, to produce finished milkfat ingredients. Selectively recombining milkfat fractions creates milkfat ingredients tailored to specific applications. For example, fractions can be recombined with skim milk and salt and texturized (votated) to produce butters

Milkfat fractions are available now.

Would you like to evaluate them? A full range of milkfat fractions plus two specialty butters made from milkfat fractions, are ready for industry trial. Choose a high-melting pastry butter or a soft bakery butter, or both! Call Kerry Kaylegian at CDR for more information and samples, (608) 265-3086.

with melting profiles and other functional characteristics that differ from conventionally churned butter.

Milkfat fractions in chocolate

The use of milkfat in chocolate illustrates the benefits of milkfat fractionation. Temperature fluctuation can cause fat bloom on chocolate, which appears as an unsightly, whitish color on the surface. The high-melting components of milkfat inhibit bloom formation in chocolate but the middle-melting and low-melting milkfat components of chocolate have a detrimental softening effect on the finished product. To solve the problem, milkfat can easily be separated in order to use the high-melting fractions for making chocolate. This takes advantage of the bloom inhibition properties of the high-melting fractions while decreasing the softening effect of the middle-melting and low-melting fractions.

The bakery industry is another area that can benefit from milkfat fractions. Fats used in different baked products (e.g., pastries, cookies) require different functional properties. The vegetable oil industry responded quite well to the specialized needs of the bakery industry, and produces a wide variety of vegetable fats designed for specific bakery applications. Conversely, the dairy industry presently produces one product for the bakery industry — butter — that must compete with more specialized ingredients. Milkfat fractions allow the

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The Effect of Diacetyl on the Consumer Acceptance of Full and Low Fat Cottage Cheese

by M. J. Antinone, H. T. Lawless, and R. A. Ledford, Department of Food Science, Cornell University.

Beginning with this issue the Pipeline will feature articles about research projects at some of the other Dairy Research Centers, thanks to Northeast Dairy Foods Research Center and the "Dairy Center News" for this one.

Data for 1992 show that New York state is the largest producer of cottage cheese in the United States, annually producing 142,537 pounds. Since 1970, however, total sales of cottage cheese in the United States have decreased almost 17%, and the trend seems to be continuing (Milk Industry Foundation, 1990). While sales of low fat cottage cheese increased during the past two decades, they have not increased enough to offset the large decrease in full fat cottage cheese sales.

The California Milk Advisory Board conducted a consumer focus study and found that consumers rated cottage cheese as "boring" and lacking flavor. Some manufacturers also feel that inconsistencies in flavor have contributed to decreasing sales. It is essential to understand diacetyl's role since it is a vital flavor constituent in cottage cheese. It is also essential to match diacetyl concentrations with consumer taste preferences. Once the preferences are known, manufacturers can determine the amount of diacetyl present through starter culture production and decide whether direct addition of diacetyl is necessary. This is especially important for low fat cottage cheese since it has 50 to 75% less fat, an essential flavor component.

Manufacturers of other dairy products like sour cream, buttermilk, and cultured butter may also find this information useful. Diacetyl is an important flavor element in these products and controlling diacetyl levels may improve flavor characteristics.

Consumers rate cottage cheese


Researchers measured consumer acceptance of both full and low fat (1% milkfat) cottage cheese by rating the acceptance of five attributes — appearance, aroma, flavor, texture, and overall opinion. Two hundred consumers used 9 point hedonic scales anchored with "dislike very much" at one end and "like very much" at the other to rate the attributes.

Low fat cottage cheese

The low fat experiment used five concentrations of diacetyl; 0, 0.25, 1, 2, and 4 ppm. Consumers found low fat cottage cheese with 4 ppm concentration of diacetyl maximally acceptable for a combined aroma, flavor, and overall opinion appeal. However, the 1, 2, and 4 ppm samples were similar. Ratings indicate diacetyl aroma and flavor may be important in determining the overall opinion of low fat cottage cheese. Consumer acceptance data for low fat cottage cheese was similar to that of full fat cottage cheese except panelists seemed to want a slightly higher diacetyl concentration in low fat cottage cheese. Several panelists noted a creamier texture in the samples that contained diacetyl.

Full fat cottage cheese

Four concentrations of diacetyl (0, 0.25, 1, 4 ppm) were tested in the full fat experiment. A small effect of added diacetyl was observed, peaking at 1.0 ppm for a combined aroma and flavor acceptance for the full fat cottage cheese. Overall opinion ratings for full fat cottage cheese tended to increase with increasing diacetyl concentration, peaking at 1.0 ppm, although the differences were not statistically significant. It is likely that consumers weighed other attributes besides aroma and flavor when judging overall appeal, diluting any differences caused by aroma and flavor.

Based on the results of this study, some consumers appear to find diacetyl an appealing flavor in cottage cheese. Because of this preference, full fat cottage cheese should contain at least 1 ppm diacetyl in the finished product while low fat cottage cheese should contain between 1 and 4 ppm diacetyl. The loss of diacetyl through microbial reduction and the effect of common cottage cheese off-flavors on the perception of diacetyl flavor are other factors that might affect the amount of diacetyl in cottage cheese. These factors still need to be addressed. 

This and that...

Back in October CDR welcomed **Frank Smeltink** from Elten Systems in Barneveld, Netherlands. Smeltink presented a seminar to students and faculty at the University of Wisconsin and to participants at the CDR Packaging Seminar. Elten Systems makes a movable rack automated system for ripening, treatment and storage of semi-hard and hard cheeses. This system uses plastic coating, with an optional anti-mold ingredient, that allows greater control of moisture content and flavor development. Smeltink also presented an overview of European hard and semi-hard cheeses, showing the geographic distribution of manufacturing methods and information about exports.


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From March 14 to 25, CDR will host scientist mentor **Dr. Ralph Timms**. Dr. Timms lives in Great Britain but his role as an international authority on milkfat takes him around the world. During his Wisconsin visit he will meet with researchers to discuss the focus and direction of projects, particularly evaluating future industrial applications. Dr. Timm's broad based experience in technical development, structuring publicly funded dairy research, and marketing milkfat promises a productive and effective visit.

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Visiting scientist, **Quian Li, Ph.D.**, arrived from the Peoples Republic of China in November. Dr. Li is working with Norm Olson, Ph.D., Department of Food Science, and other graduate students on a project that may help solve some the puzzling problems of reduced-fat cheese flavor. Dr. Li, a microbiologist, will help the research team select and evaluate bacterial strains exhibiting the type of metabolic activity that enhances cheese flavor. The official project title is "Characterization of bacteria to be adsorbed on milkfat globules to enhance flavor development in reduced-fat Cheddar cheese."

###


Dr. Steve Ingham recently joined the Dept. of Food Science at the University of Wisconsin-Madison. After spending four years at University of Saskatchewan, Dr. Ingham came to Madison to serve as the Food Safety Extension Specialist. He brings a variety of teaching, research, and extension experience to this new position. In Madison, Dr. Ingham will focus on food safety education and developing Extension programs in HACCP systems. 

Milkfat

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creation of a high-melting butter for pastries, a lower-melting butter for cakes and cookies, and a variety of butters tailored to specific applications.

Milkfat fractions available

The Center for Dairy Research, in conjunction with the Wisconsin Milk Marketing Board and several industry partners, is producing milkfat fractions. Using a pilot plant leased from Fractionnement Tirtiaux (Belgium), a company that manufactures equipment for the commercial scale fractionation of milkfat and other edible oils, we have produced milkfat fractions that exhibit a wide range of melting behaviors. (Including very-high-melting (melting point above 113°F), high-melting (melting point between 95 and 113°F), middle-melting (melting point between 77 and 95°F), and low-melting (melting point below 77°F). We have also produced two specialty butters for the bakery industry, a high-melting pastry butter and a soft bakery butter. Specialty butters are made by selectively blending milkfat fractions to meet a target melting profile. Then, the milkfat blend is mixed with skim milk and texturized using a recombined butter process. These milkfat ingredients are now available for industry to evaluate. For more information and samples, please contact Kerry Kaylegian at CDR, (608) 265-3086. 

The Curd Clinic

Q. We have seen a lot more mold contaminating our retail packaged cheese this past summer and fall. Is this a seasonal problem? How can we control it?

A. With the wet conditions we had this past year, mold spore counts in the environment were higher than normal in summer and fall. However, you should be able to effectively control mold contamination in packaged cheeses with the proper packaging conditions and good sanitation.


To begin with, totally isolate the packaging area from other processing areas of the plant. The room should be under positive pressure with ventilating air to prevent entry of outside contaminated air. Filter the ventilating air through high efficiency-filter media or an electrostatic filter bank. Take care to locate the air intakes upwind of parking surfaces, drier outlets, effluent treatment plants, spray irrigation fields and ventilation systems associated with dairy processing facilities. It's best to extend air intakes well above building roofs to avoid drawing in particulate from the roof.

If you clean and sanitize cheese cutting and packaging equipment properly, you can reduce the chance that mold spores from a previous product will remain. Immediately removing and disposing mold trim and scrap will eliminate potential contamination of the equipment and the packaging environment. If possible, avoid processing mold-ripened cheeses in the area. If you can't avoid it, then process mold-ripened cheeses last, just before cleaning and sanitizing the equipment and area.

Package types can effectively control mold spoilage. Vacuum packaging or gas flushing will reduce the amount of oxygen present in the package and slow mold growth. Also, proper packaging with enzymatic oxygen scavengers can inhibit mold growth in shredded cheese by depleting the oxygen in the package. Always store and handle packaging materials properly to eliminate potential contamination with mold spores.



Curd Clinic Doctor for this issue is Dr. Bill Wendorff, Dept. of Food Science, University of Wisconsin-Madison

When handling, cutting and packaging cheeses, focus on minimizing the potential for contamination with mold spores. Always package cheeses as soon as possible after cutting to shorten the time that the cheese is exposed to the environment. It's best to save the use of antimycotic agents, like sorbates and natamycin, as a last resort to control mold spoilage in packaged cheeses. 

Questions for the Curd Clinic?
Write to:
The UW Dairy Pipeline
1605 Linden Dr.
Madison, WI 53706
FAX: 608/262-1578

What Influences Freezing Point?

W.L. Wendorff, Dept. of Food Science, University of Wisconsin-Madison, R.M. Kaiser, Dodge County University of Wisconsin Extension and R. L. Bradley, Dept. of Food Science, University of Wisconsin-Madison

In the past year, we have had numerous calls from producers who did not qualify for premiums due to increased freezing points of their milk. In many cases, these were well-managed herds where all possible preventive measures were taken to eliminate any added water in the milking system. Milk composition seemed normal in fat, protein and somatic cell count (SCC), but sometimes was low in lactose. A review of factors affecting the freezing point of milk may yield some insight.

Milk components contributing to freezing point

The solutes in a solvent affect the freezing point of a liquid. In the case of milk, lactose and the milk salts, dissolved in the water phase, are the key components affecting freezing point. Scientists report that lactose, chloride, citrate and lactic acid account for 79 to 86% of the total freezing point depression and lactose alone contributes over 50% of the freezing point depression. However, increases or decreases in any of these four components will significantly affect the freezing point of milk. Some of the partial freezing point depressions remain relatively constant, indicating that they are not independent of each other. In most cases, variations in one component compensated for variations in the other components — thus keeping the freezing point of milk constant. Studies indicate that as chloride levels increase in mastitic milk other components decrease, producing no significant change in the freezing point. Much of the variation in freezing point of milk has been associated with citrate content, which declines steadily through the winter months and early spring.

Other factors affecting freezing point


Although the freezing point of milk is generally considered a "physiological constant," a number of factors can affect the freezing point of individual samples. For example, milk from Holsteins has a higher freezing point than milk from Jerseys and Guernseys. Along with the seasonal variation mentioned earlier, region of production seems to

influence freezing point, in a study of five Minnesota locations the freezing point increased in the south. Researchers consistently find that morning milk has a higher freezing point than evening milk, a difference that also varies by season.

Feed effects on freezing point

Diet influences the amount and composition of milk, including the freezing point. Underfeeding, including diets low in total digestible nutrients, leads to milk with higher freezing points. Also, when cows drink a large amount of water at one time they can produce milk that has a higher freezing point. Variations in mineral intake, particularly salt, can lower the freezing point of milk. It's possible that poor feed quality this past year influenced the unusual increase in milk with higher freezing points.

Most quality payments may underestimate the importance of freezing quality of milk. Plants should consider this as more than a mere control mechanism against added water in milk. By understanding the factors affecting the freezing point of milk and establishing individual plant freezing point bases, plants can set up a meaningful quality measurement. This may provide an effective measure of protein and MSNF (define) coming into the plant, and serve as an incentive to promote production of high protein milk.

For a complete transcript of this report, call Bill Wendorff at (608) 263-2015 or CDR at 262-8015. We welcome any additional thoughts and comments regarding the causes of variations in the freezing point of milk, particularly observations of patterns and and cause and effect relationships. 

CDR research projects: Cheese technology

Listed below are the current cheese technology research projects:

Influence of Lipolytic Reactions in Cheese Flavor and Texture. Mark Johnson, CDR, Sithian Pandian, Universite Laval, 3/1/1993 to 2/28/1995 (WMMB).

CDR Cheese Research Applications Program. James Path, CDR, 7/1/1993 to 6/30/1994 (WMMB).

Characterization of the Aminopeptidase III From *Lactobacillus helveticus* CNRZ 32 and its Influence on Milk Protein Hydrolysis. James Steele, Dept. of Food Science, 7/1/1993 to 6/30/1994 (NDPRB).

Development of Information Systems for Application to the Production of Specialty Cheeses. Brian Gould, Ag. Econ., 7/1/1993 to 6/30/1994 (WMMB).

Development of Process Technology to Reduce the Potential for Light-induced Pink Discoloration of Annatto-colored Cheese. William Wendorff, Dept. of Food Science, 7/1/1993 to 6/30/1994 (NDPRB).

Effect of Coagulum Firmness on Composition and Quality of 25% Reduced Fat Cheddar Cheese. Carol Chen, CDR, Mark Johnson, CDR, 7/1/1993 to 6/30/1994 (NDPRB).

Evaluating Microstructure of Reduced-fat Cheese by Computer Image Processing. Sundaram Gunasekaran, Ag Engineering, Mark Johnson, CDR, N. Olson, Dept. of Food Science, 7/1/1993 to 6/30/1995 (NDPRB).

Implementation of Biopreservatives to Control Spoilage Bacteria Associated with Cheddar Cheese. John Luchansky, Food Micro. & Tox., Mark Johnson, CDR, 7/1/1993 to 6/30/1995 (NDPRB).

Manufacture of a 25% and a 50% Reduced Fat Cheddar Cheese by the Blending of Low and High Fat Curd. Carol Chen, CDR, Mark Johnson, CDR, 7/1/1993 to 6/30/1994 (NDPRB).

Mechanisms for Production of Cheese Flavor Compounds. Robert Lindsay, Dept. of Food Science, 7/1/1993 to 6/30/1996 (NDPRB).

Relating Cheese Quality Parameters with Composition and Processing Conditions Using Neural Networks. Sundaram Gunasekaran, Ag Engineering, N.F. Olson, Dept. of Food Science, J. Norback, Dept. of Food Science, 7/1/1993 to 6/30/1995 (NDPRB).

Resource center

Software

Would you like to know how to analyze and predict cheese yields? Researchers at the Wisconsin Center for Dairy Research have developed software that allows you to analyze the impact of changes in milk and cheese characteristics on cheese yield and maximize your net return.

CHYIELD is a new computer program that you can use to determine the effects of changes in milkfat content, protein percentage, and cheese moisture — in a variety of cheeses. You can also use CHYIELD to analyze the effect of standardizing your milk. Display the analyses graphically, send it to a file for later use, or send it to your printer. All you need for this "stand alone" program is an IBM compatible computer and a printer. Call Brian Gould, CDR Senior Scientist, at (608) 263-3212 for a copy of CHYIELD or more information.

Scandinavian Cheese Seminar

On April 19, 1994 CDR and WMMB will present a seminar about Scandinavian cheeses. This is the first in a series of seminars featuring cheese, and cheese makers, from different areas of the world. Two experts from Dalum Dairy College in Dalum, Denmark, will come to Madison to discuss topics ranging from the history and growth of the Danish dairy industry to types of Scandinavian cheeses and trends in cheese manufacturing. Lecture and discussion fill the first day of the seminar, followed by three days in the lab making a blue mold cheese, an eyed type and a smear ripened cheese. The lab session is limited by space and priority will be given to Wisconsin participants in the Cheese Artisan and Master Cheese Maker's program. The 1st day lecture session costs \$75, tuition for the complete session is \$175 for Wisconsin residents, \$250 for non-residents. For more information, call Jim Path at (608) 262-2253.

New Video

The next time you get to Madison, stop at Babcock Hall to view the new video, now set up near the observation gallery on the second floor. "Science of the Dairy Plant" is a seven minute video that answers some of the common questions that consumers ask about dairy products. The video

also describes some of the exciting food research underway at the University of Wisconsin's Department of Food Science.


Handbook of Milkfat Fractionation

Scheduled for publication in the fall of 94, the Handbook of Milkfat Fractionation is an ambitious monograph that organizes, summarizes and interprets information about milkfat fractionation technology and applications. Kerry Kaylegian, CDR researcher, working with Robert Lindsay, Professor, Department of Food Science, put the monograph together so that producers, users and researchers have easy access to public information about milkfat fractionation collected from books, journals, conferences, and patents. For more information about milkfat fractions, see Kaylegian's article in this issue.

New Dairy Chemistry Short Course

The Applied Dairy Chemistry Short Course is a new, intensive two-day course covering the chemistry of milk and milk products. The course will be held in Madison on May 24-25, 1994. Bill Wendorff, Ph.D. and Bob Bradley, Ph.D., of the University of Wisconsin and David Smith, Ph.D., University of Minnesota are developing this course for students who have had high school chemistry. It will provide a better understanding of the chemical and physical changes that take place while storing and processing dairy products. Cost is \$175, which covers registration, class materials, and instruction. Enrollment limited by lab space to 30 students. Call Bill Wendorff at (608) 263-2015 for more information.

IDF Catalogue

Looking for another source of information? The International Dairy Federation publishes a variety of bulletins, books and newsletters covering a broad range of technical topics. The scope ranges from marketing to microbiology and nutrition to technology. For a catalogue, contact the US National Committee of IDF at (708) 446-2402 or FAX (708) 446-2456. 

Calendar of Events

March 15-17 World Championship Cheese Contest
Green Bay, WI. Call WI. Cheese Makers Assoc. for more information, (608) 255-2027.

March 21-25 Wisconsin Cheese Technology Short Course, UW-Madison. For more information call Bill Wendorff at (608) 263-2015.

March 29 Wisconsin Center for Dairy Research Open House, University of Wisconsin-Madison. Call CDR at (608) 263-5970 for information and invitation.

April 6-7 International Cheese Technology Exposition, LaCrosse Center, LaCrosse, WI. Sponsored by WI Cheese Makers Assoc. For info call WCMA at (608) 255-2027. Includes CDR Sanitation Seminar on April 7th, 8:30 to 11:30.

April 19-22 Basic Cheesemakers License Short Course, River Falls, WI. Call Rane May at (715) 425-3150 for more information.

April 19-22 Scandinavian Cheese Seminar, UW-Madison. See Resources in this issue or call Jim Path (608) 262-2252 for more information.

April 27-28 Dairy Products Technical Conference, co-sponsored by CDR and the American Dairy Products Institute (ADPI). Follows ADPI annual mtg. on April 25-26. Both held at the Chicago O'Hare Marriott. For more information call (312) 782-4888. (Fax (312) 782-5299)

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May 4-5 HACCP Workshop, Madison, WI. Sponsored by UW-Extension and WI Assn. of Milk and Food Sanitarians. Call Steve Ingham (608) 265-4801 for more information.

May 24-25 Applied Dairy Chemistry Short Course, Madison, WI. Call Bill Wendorff for details, (608) 263-2015. (See Resources in this issue).

June 2-3 Wisconsin Cheese Grading Short Course, Madison, WI. Call Bill Wendorff for more information, (608) 263-2015.



Wisconsin CENTER FOR DAIRY RESEARCH

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