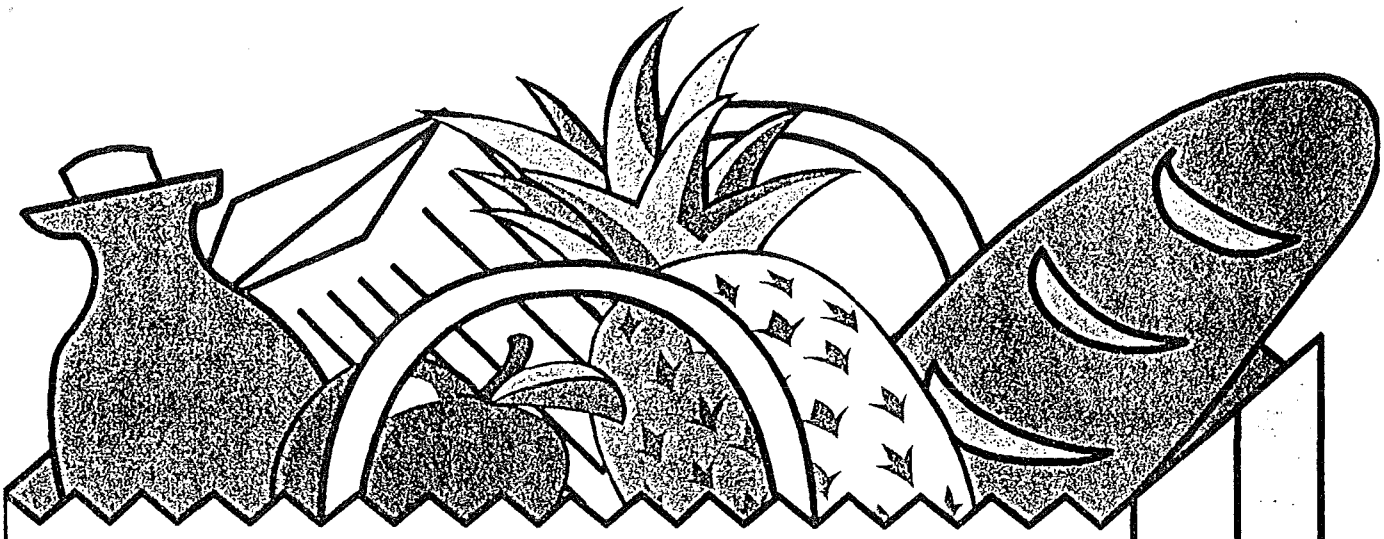

Locally Consumed Food Products

Baseline Study

Produced by:

Maine Department of Agriculture, Food and Rural Resources

November 2000

Executive Summary

When the Legislature directed the Maine Department of Agriculture, Food and Rural Resources to develop a baseline methodology to determine the amount of food grown in Maine that is actually consumed here in Maine, it seemed like a straight forward request. Upon completion of this report; however, additional information was identified that would expand our understanding of why food consumers buy what they buy, where they buy it, and how much of certain items get consumed. The question of how much Maine product is consumed at the local level represents a beginning understanding of a larger food marketing and distribution system that is geared to respond to the consumer market. Understanding this system may be more important in our ability to expand the agriculture sector locally.

Consumers today are much more sophisticated in their food preferences and purchasing. They have a vast amount of information presented to them about food products and multiple outlets to get their food. These outlets range from the local farm stand to the large superstores. It also includes a growing reliance on restaurants and fast food eating places for meal solutions as the amount of time to prepare meals at home diminishes. In the basic research completed for this report, it appears that ease of preparation and conveniences are the driving factors behind this trend towards meals away from home and more prepared food purchases at the local supermarket. With the advent of the Internet and the ability of mainstream media to almost instantaneously communicate information, consumers are well aware of the choices they have in the food market and how best to get the value-added products they want when they want them.

The *Locally Consumed Food Products Baseline Study* identifies per capita consumption as the most practical method to profile local food consumption in Maine. Basic figures are presented on what is produced by Maine farmers and what Maine residents consume. While this is a good start at understanding where gaps exist in local production and consumption, additional work needs to be done on the effects of demographics and consumer habits. Aside from identifying per capita consumption as the method of measurement for food consumption, the study also develops a rationale for looking into other food consumption factors such as consumer tastes and preferences. This expanded understanding of the consumer market can then be translated into usable information by the agriculture sector to produce valued added products or shift production to other more consumer valued products. Expanding the baseline data to include these other factors will better inform the agriculture sector of the trends and opportunities available to them for expanding farm gate receipts and net farm income.

The Study concludes with additional recommendations on what information would need to be collected to make the baseline method of per capita consumption of food products more meaningful. A true measurement of results for the farm sector from this work would be increased farm gate receipts. As pointed out by this study this is accomplished best by tracking consumer market data, using this data to develop trends and opportunities, and disseminating that information to the farm sector which in turn can use it to increase income.

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Introduction

In the fall of 1999, the Maine Legislature approved the formation of a Task Force to look into the issue of agriculture vitality in Maine. The Task Force used public forums and personal interviews along with a variety of data collection techniques to collect information about the barriers and opportunities facing agriculture today. The Task Force concluded its work with a report to the Legislature[1] that culminated in the passage of legislation directing the Maine Department of Agriculture to implement specific actions to improve opportunities for Maine's agriculture sector. L.D. 2532 An Act to Implement the Recommendations of the Task Force to Study the Need for an Agricultural Vitality Zone Program enacted specific actions for the Maine Department of Agriculture, Food and Rural Resources. Section 3.7 MRSA 401-B, Sub-6 reads "Monitoring consumption of Maine produced food. By November 1, 2000 the Commissioner shall develop a method and baseline research to estimate the percentage of food consumed in Maine that is produced within Maine. The Commissioner shall update the methodology and estimate every 2 years and include the latest estimate in the biennial report submitted to the legislature pursuant to section 2, subsection 5." In order to facilitate the completion of this research, the Maine Department of Agriculture entered into a cooperative agreement with the USDA Natural Resources Conservation Service to secure the services of a person to work with the Department's Marketing Division. The Maine Department of Agriculture presents the research and findings in this document to the Legislature.

Background

The first question that needed to be asked was how to generate realistic consumption by Maine's citizens. There are a number of different methods that are employed by both public and private organizations. Often Food retailers and Trade Associations use scanner data and other proprietary information to develop profiles of the shopping public. This information is then used to shape marketing plans and new product development. This information is either not available generally or is available for a price. The public sector collects data on food consumption primarily through the US Department of Agriculture and its connections to University research programs. This information is available widely, and can be obtained fairly easy. However, since it is based on publicly collected information like census data it may not be as accurate, and in some cases may only be a snapshot of a particular segment of the food industry. For instance, Figure 1 shows the comparison

[1] "Maine Food for Thought", Report of the Task Force on Agriculture Vitality, January 2000, Maine Legislature Office of Policy and Legal Analysis.

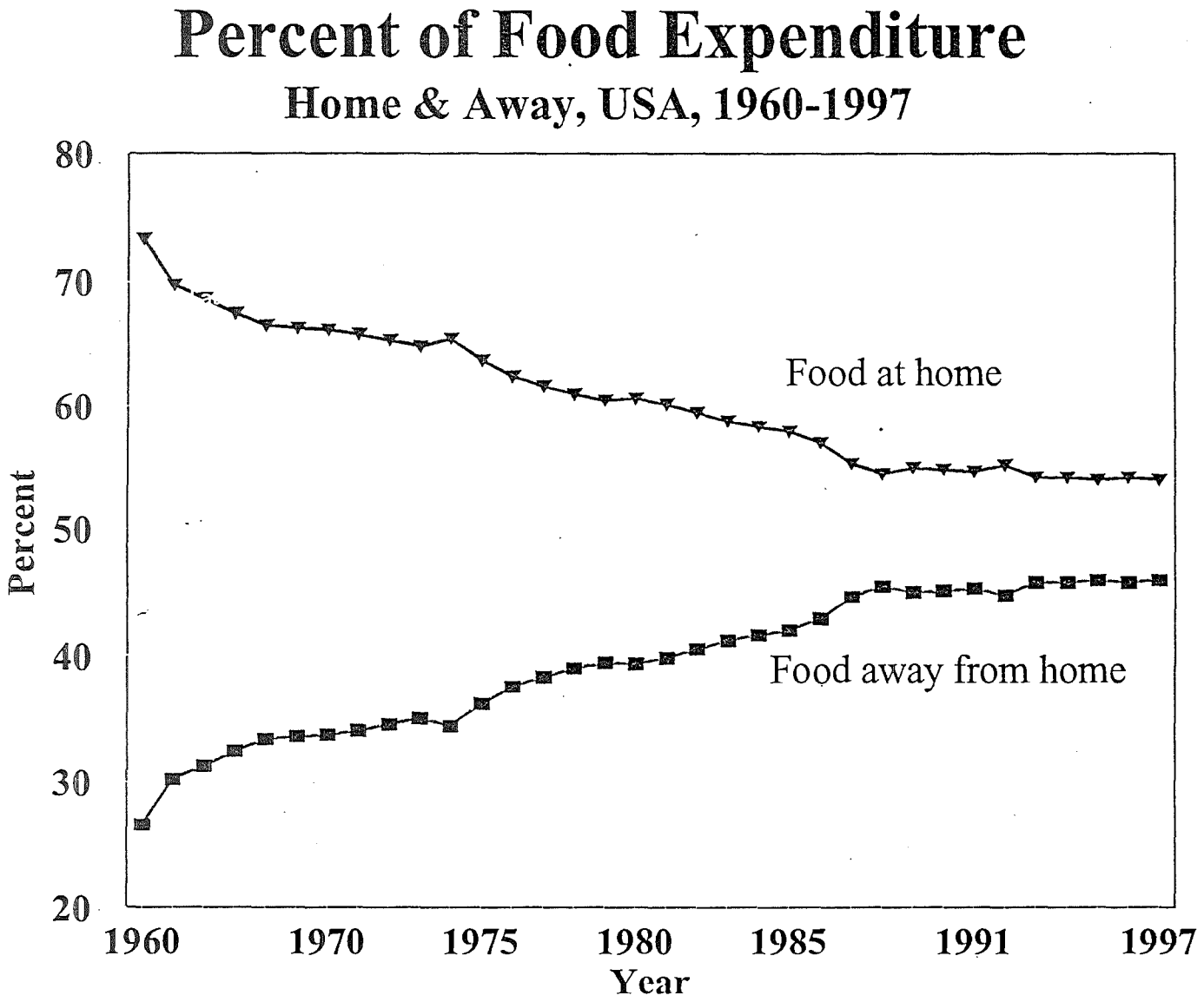

Figure 1: Americans spend noticeably less on food from stores (labeled food at home) now than they did in decades past. However, since 1990 the decrease in expenditures on food from stores has leveled off.

between food consumed at home and food consumed away from home.[2] While this may help us understand the general shopping patterns of consumers, it does not help determine how much of food grown in Maine reaches Maine consumers.

In general, a macro approach to food consumption is used to measure the amount of food consumed in the US[3]. Food supply and utilization data compiled and published annually by the US Department of Agriculture Economic Research Service measures the flow of raw and semi processed food commodities through the marketing system. More accurately it measures the disappearance of food since this data reflects the amount of major food commodities, beginning inventories, and imports entering the market and subtracting the residual after exports, industrial uses, seed and feed use, and year end inventories. In other words, if the Maine Department of Agriculture were to model its baseline report on this process it would measure the amount of food produced in Maine, determine the amount of food imported, and pro-rate any inventories. Then it would subtract exports, industrial uses, seed and feed use, and year-end inventories. The remaining amount would be the amount of food consumed in Maine. As stated earlier, this would give a macro estimate of the amount of food consumed in Maine.

Based on the work of researchers at the University of Minnesota Retail Food Industry Center, the most reliable source of information on food consumption is the "Continuing Survey of Food Intake of Individuals" produced by the U.S. Department of Agriculture (USDA)[4]. According to the researchers "The data is the only publicly available data that reveals the full range of foods individuals actually eat, when and where they eat it, and where they obtain it. Therefore, the data provided is a better picture of overall food consumption behavior than data collected at the market level where sales are the unit of measure." To illustrate this point, Figure 2 shows the difference in the source of food when measured by quantity versus expenditure. This data is for sale from the National Technical Information Service of the US Department of Commerce.

As an alternative, this report uses per capita consumption data that is easily obtained from USDA. Per capita income is the average income computed for every man, woman, and child in a particular group. The Census Bureau derived per capita income by dividing the total income of a particular group by the total population in that group (excluding patients or inmates in institutional quarters). Table 1 contains the per capita consumption data for the major food commodities for the period 1997 to 1998. For the purposes of this report all data presented is for the period 1997 - 1998. More recent data is available but is not complete. This table comes for the 1999 New England Agriculture Statistics produced by the New England Agriculture Statistics Service.

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[2] Source: "Who Eats What, When, And From Where?", Carlson, Andrea, Kinsey, Jean, and Carmel Nadav, The Retail Food Industry Center, University of Minnesota, 1998.

[3] "Major Trends in US Food Supply", 1909-99, Food Review, Volume 23, Issue 1, January 2000, USDA Economic Research Service.

[4] U.S. Department of Commerce, Technology Administration, National Technology Information Service, Springfield, VA. http://www.ntis.gov

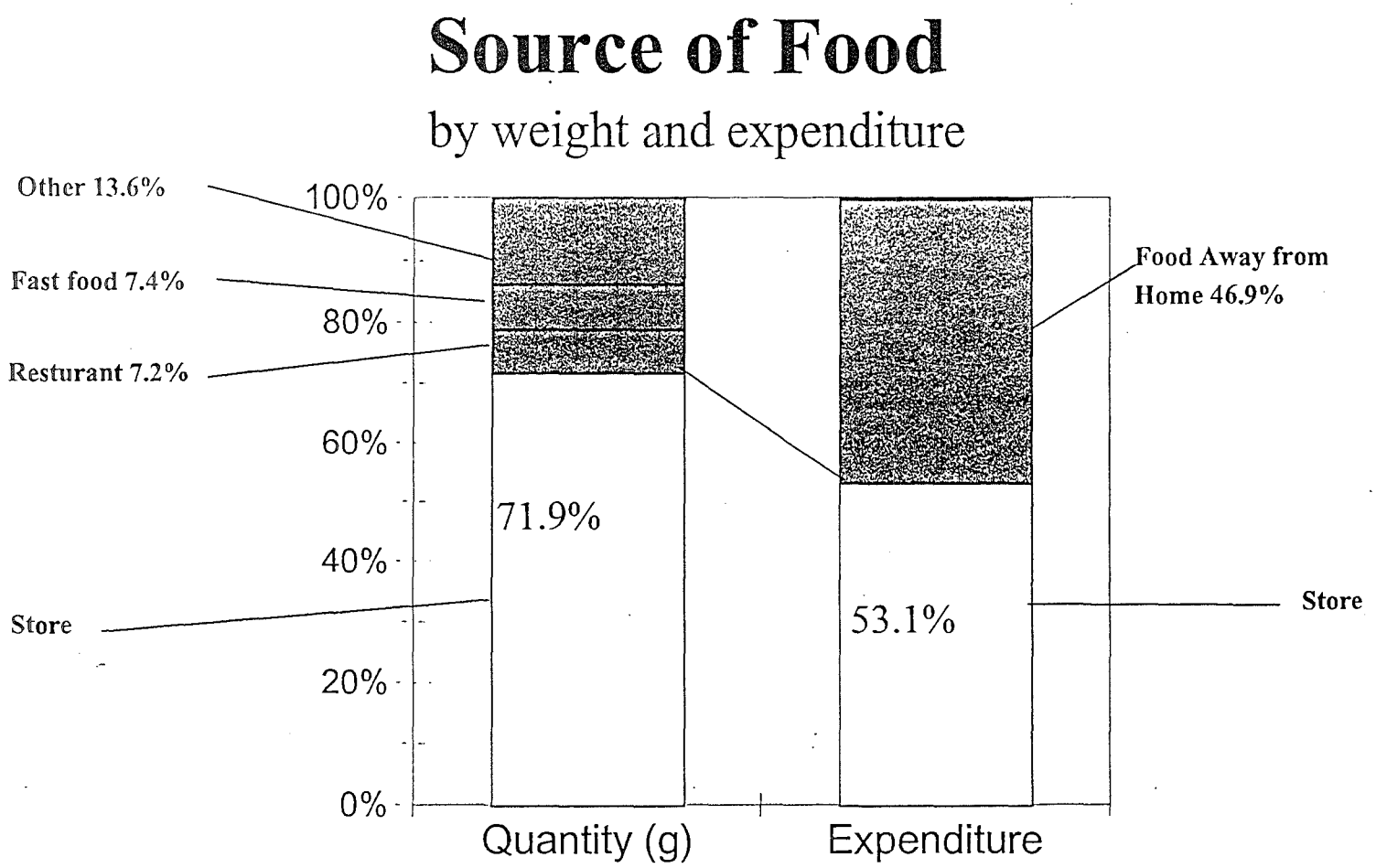

Figure 2 There are at least two ways to examine food consumption. The bar on the right (expenditure) shows the traditional way of measuring food consumption – in dollars. However, if measured by calories or grams of food consumed, the picture is quite different. The bar on the left (quantity) represents what people actually eat – or "the share of stomach." When measured in grams, 71.9% of food people eat comes from stores.

Per Capita Consumption of Major Food Commodities United States	Year	
Commodity	1997	1998
Red Meats	**111.0**	**115.6**
Beef	63.8	64.9
Veal	0.9	0.7
Lamb and Mutton	0.8	0.9
Pork	45.6	49.1
Poultry	**64.2**	**65.0**
Chicken	50.4	50.8
Turkey	13.9	14.2
Fish and Shellfish	**14.5**	**14.8**
Eggs	**30.7**	**31.4**
Diary Products (milk equivalent, milkfat basis	**577.7**	**582.3**
Cheese (excluding cottage)	28.0	28.4
American	12.0	12.2
Italian	11.0	11.3
Other Cheese	5.1	4.8
Cottage Cheese	2.7	2.7
Beverage Milks	206.9	204.5
Fluid Whole Milk	72.7	71.6
Fluid Lower Fat Milk	99.8	98.5
Fluid Skim Milk	34.3	34.4
Fluid Cream Products	9.0	9.2
Yogurt (excluding frozen)	5.1	5.1
Ice Cream	16.4	16.6
Lowfat Ice Cream	7.9	8.3
Frozen Yogurt	2.1	1.9
Fats and Oils - Total Fat Content	**64.9**	**66.5**
Butter and Margarine (product weight)	12.8	12.5
Shortening	20.9	20.9
Lard and Edible Tallow (direct use)	3.1	5.2
Salad and Cooking Oils	28.6	27.9
Fruits and Vegetables	**710.8**	**448**
Fruit	**298.3**	**293.9**
Fresh Fruits	137.1	129.9
Canned Fruit	20.3	17.2
Dried Fruit	10.8	12.9
Frozen Fruit	4.2	5.0
Selected Fruit Juices	125.9	128.9
Vegetables	**416.0**	**418.4**
Fresh	190.4	186.5
Canning	107.8	108.0
Freezing	82.2	82.6
Dehydrated and Chips	32.7	32.9
Pulses	8.3	8.4
Peanuts (shelled)	**5.8**	**5.8**
Tree Nuts (shelled)	**2.1**	**2.2**
Flour and Cereal Products	**200.1**	**167.3**
Wheat Flour	149.5	147.8
Rice (milled basis)	19.5	19.5
Caloric Sweeteners	**154.1**	**154.1**
Coffee (green bean equivalent)	**9.3**	**9.3**
Cocoa (chocolate liquor equivalent)	**4.1**	**4.1**

Source: 1999 New England Agriculture Statistics, New England Agriculture Statistics Service.

Table 1

Understanding the consumer is key!

Understanding how much of Maine's food production is actually consumed by Maine's population is not as easy as simply comparing farm level production of a commodity to how much of something we actually eat. There are whole ranges of factors that effect what the consumer eats, when and where they eat it, and in what form they eat it. Food consumption in Maine is like an onion; you start by peeling the outer layer of skin off only to find another layer of skin underneath. Eventually, you will reach the center of the onion but only after striping away many layers of skin. In our effort to understand how much food grown in Maine is actually consumed in Maine, we had to peel away many layers of data and sometimes-conflicting information. One reality that quickly became apparent was that consumption statistics could only be understood in the context of consumer habits and preferences. Achieving that understanding required an analysis of demographics, consumer habits, retail marketing patterns, and the food marketing and distribution system in general. Only at point when we have a better understanding of the consumer and their habits can we look at per capita consumption of food in Maine and begin drawing our conclusions.

Demographics

This report will not attempt to detail all of the demographic data that potentially effect food sales. Nor can we accurately account for all the impacts given the current data available. It is recommended that additional research be done in tracking and understanding the demographics of consumer habits and spending to get a more accurate picture of food consumption in Maine. For the purposes of this report, a brief look at how population trends, income, and overall economic conditions impact food consumption will be provided. It is important to note, also, that other factors like culture and climate also play a role in determining the food we eat.

Demographically, Maine ranks 39th among all states in total population which currently stands at approximately 1,253,000. However, the state's population is not evenly distributed. Based on figures used in the report "Whither Maine's Population" appearing in the Winter 2000 issue of Maine Policy Review[5], approximately 44% of the state population resides on 14% of the land base in southern Maine. The report goes on to indicate that there are three trends effecting Maine's population and its future both economically and socially. They are slow growth in population, a reduction in the number of young people, and the aging of the population. While they do not sight the effects these three major forces have on food consumption, other work would indicate that buying habits and consumption patterns are effected by age, income, transportation, and other socioeconomic factors. To illustrate we can project that as Maine's population changes the following effects could be felt concerning food consumption. Slow growth will impact food consumption directly by limiting the growth of direct sales in local markets. There are two basic ways to expand local sales directly to the

[5] Mageean, Deirdre, AvRuskin, Gillina, and Sherwood, Richard, "Whither Maine's Population", Maine Policy Review, pp. 28 - 41, Winter 2000.

consumer. The first is to expand the number of people buying local food currently. This is accomplished by educating them about their buying habits and in turn convincing them to change those habits to buy more local product. The second is to expand the pool of customers. In areas where there is positive growth in a community's population, the opportunity exists to generate additional sales, as more people become aware of the local product. With projections that the state will experience slow growth that potential pool of new customers will be small. On the other hand, the distribution of age within the population effects the diet and nutritional make up of the food basket being purchased which in turn effects the type of food being purchased locally. According to the report "Who Eats What, When, and From Where" researchers found that "Shopping patterns varied by age, income, and household composition. Teenagers and young adults tended to consume more food from sources other than stores, while older adults and households with children consumed more food from stores. Children and households with children were also more likely to consume three meals a day. Children and teenagers ate more snacks than older people, as did higher income people".[6] In order to develop strategies for expanding the amount of local food consumed, there needs to be information collected on the effects age and other demographic data have on food consumption. This will help with the implementation of long term changes designed to increase the amount of Maine food consumed.

Maine is also in a period of relatively good economic times. The Maine Department of Labor in June reported that per capita personal income rose 6.2% between 1998 and 1999 to $24,960. They estimated that this was the third highest rate of increase among the states and exceeded the national average of 4.8% by 1.4%. Along with this growth in per capita personal income is an unemployment rate of 3.3 per cent[7]. According to a report on food spending[8] published by USDA, "studies have shown that as incomes increase, consumers increase their expenditures on more expensive fresh foods, more processed food, and more meals eaten out." It is important, therefore, to understand the economic conditions projected for the future in order to develop sound strategies for increasing the amount of local food consumed.

Food consumption is often a function of our life styles and habits. One indicator of how life style affects the foods we eat is the evolution of snack foods. As Marilyn Raymond points out in her article "The Changing Face of Snack Foods"[9] snacking has become a source of fuel replacing the traditional meal. These foods are more portable and healthy serving as mini meals. And the trends would indicate that snack foods will continue, and possibly increase, as a chief source of energy in the future. What this means for farmers is that consumers will want to eat healthy foods but in a form that can be easily and quickly consumed at the office, in the car, or just about anywhere we go. Another example of how mass marketing and life style effect the food industry is the packaging of milk. Single serving milk often had a difficult time competing with its juice and soft drink rivals. Sales did not significantly increase until the serving container was changed from a square milk carton shape

[6] "Who Eats What, When, And From Where?", Carlson, Andrea, Kinsey, Jean, and Carmel Nadav, The Retail Food Industry Center, University of Minnesota, 1998.
[7] Labor Market Digest, Maine Department of Labor, June 2000.
[8] Jekanowski, Mark and James Binkley, "Food Spending Varies Across the United States", Food Review, Volume 23, Issue 1, pp. 38 - 43, January 2000, USDA Economic Research Service.
[9] Raymond, Marilyn, "the Changing Face of Snack Foods", May 2000, Idea Beat Web site www.ideabeat.com

to a round plastic bottle. When people discovered that these new milk containers could now fit into the cup holder in their car, single serving milk sales rose. Finally, Raymond points out that hand held foods are growing at about 19% per year and are now a $1.6 Billion industry. There are many other examples of value added food products and packaging that are shaped by our life styles and habits. All of this contributes to the difficulty of marketing locally grown foods. Some consumers can be convinced to give up the convenience of these prepackaged foods in favor of fresh locally grown products, while some farms can adopt their product to the food consumption trends driven by life style. In the end it will take finding a balance between value added processing that can meet the demands of consumers and a changing of consumer preferences and habits that will help increase the amount of local food consumed.

Consumer Perspective

With the 21st Century here, agriculture in Maine is at a crossroads. The changing dynamics of a global economy, coupled with changes in consumer preferences and buying habits, demand the agricultural industry in Maine make major decisions about its future and focus. We only need to read current headlines to see first hand the changes that effect our lives. For instance, it is predicted that next year the computer software industry will replace automakers as America's number 1 manufacturer. Food production will always be necessary to sustain a growing and healthy population; however, how Maine competes in world markets and what niches it can fill are issues that will determine long term success. Maine agriculture must produce what the consumer wants, at a profit, in order to survive. And that consumer is changing their habits. Today $2,618 is spent on food per person. More importantly what makes up the person's food basket is of critical importance to the farmer. A person's diet has changed significantly in the last 25 years shifting to 122 pounds more vegetables and fruit, 57 pounds more grain, 28 pounds more sugar, 16 pounds more cheese, and 74 fewer eggs.[10] Farmers today need to become more sophisticated in their ability to understand the consumer market.

Food processing, distribution and consumption are changing. Take for instance the amount of money spent eating out in restaurants. From 1970 to 1999 restaurant sales grew 827% from $42.8 Billion to a projected $354 Billion this year[11]. Table 2 shows a break down of the industry. The restaurant share of the food dollar now stands at 47 Percent according to USDA researchers[12]. And it is projected by the National Restaurant Association that sales will grow to $577 Billion and account for 53% of the food dollar. Maine currently has 2,788 establishments employing about 35,500 people. This information coupled with a consumers desire to have meals that are easy to prepare make it easy to see why reliance on producing a basic food product is no longer enough to make a profit. Today you can sell directly to a restaurant or add value to your product that will entice people to buy it, or you can market your product through one of many brokers or wholesalers who in turn sell to the

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[10] Source: "Food Consumption, Prices, and Expenditures 1970 to 1997", USDA Economic Research Service, Statistical Bulletin #965, 1998.

[11] National Restaurant Association, Restaurant Industry Factbook, 2000, www.restaurant.org

[12] Clauson, Annette, "Share of Food Spending for Eating Out Reaches 47 Percent", Food Rview, Volume 22, Issue 3, September 1999, USDA Economic Research Service.

Food Away From Home
Sales at a Glance, 1988 to 1998

Food Marketing Magazine

Fast Food Sales Continue To Outpace Sales at Restaurants and Lunchrooms

Industry segment	Sales			Change
	1988	1997	1998	1988-1998
	Million Dollars			Percent
Commercial foodservice	155,702	244,732	256,488	65%
Fast food outlets	65,749	100,851	102,387	56%
Restaurants and lunchrooms	61,888	94,332	100,792	63%
Cafeterias	3,473	3,619	3,771	9%
Caterers	1,214	1,480	1,975	63%
Lodging places	9,968	14,068	14,417	45%
Retail hosts	7,120	17,481	18,819	164%
Recreation and entertainment	4,754	11,190	12,455	162%
Separate drinking places	1,536	1,711	1,872	22%
Noncommercial foodservice	44,231	61,730	63,631	44%
Education	14,105	23,166	24,167	71%
Elementary and secondary schools	7,074	11,318	11,717	66%
Colleges and universities	7,061	11,848	12,450	76%
Military services	1,792	1,928	1,930	8%
Troop feeding	1,032	1,070	1,054	2%
Clubs and exchanges	760	858	876	15%
Plants and office buildings	4,670	6,991	7,335	57%
Hospitals	3,590	3,534	3,424	-5%
Extended care facilities	5,392	6,302	6,740	25%
Vending	5,471	5,436	5,000	-9%
Transportation	3,994	4,640	4,852	21%
Associations	1,030	1,758	1,905	85%
Correctional facilities	1,678	3,276	3,470	107%
Child daycare centers	807	1,937	2,076	157%
Elderly feeding programs	142	174	173	22%
Other noncommercial	1,560	2,588	2,559	64%
Total foodservice sales	**199,933**	**306,462**	**320,119**	**60%**

Note: Foodservice sales exclude sales taxes and tips.

1 Includes more categories in 1997-98 than in 1988.

Source: USDA's Economic Research Service. For more information, contact Charlene Price at (202) 694-5384 or ccprice@econ.ag.gov.

Table 2

superstores that now characterize the grocery store market. Today, most people do their food shopping in a grocery store. Total retail grocery store sales were $436.3 Billion in 1997. Figure 3 shows the breakdown of food sales volume by type of store. Supermarkets accounted for 76.6% of sales, convenience stores 6.3%, wholesale clubs 4.7%, and other stores accounted for 12.4% of sales. This new "agri-food" industry combines the production capability of farms today, the economies of scale and size of the major wholesalers and retailers, and consumer preferences for convenience foods and restaurants into a food distribution system that offers tight margins for all players. It is this food marketing and distribution system that presents the largest challenge in terms of changing the volume of food consumed locally. While we can study and understand how food is consumed and where it is consumed, emphasis would be better placed on developing a more complete profile of the food distribution and marketing system in Maine and identifying ways to expand opportunities in this arena. Work is already underway to expand the availability of local food through more farmers markets and sales to institutions like restaurants. It is imperative that more effort is put into tracking consumer trends and preferences, and investing more in marketing initiatives.

So who is in control in this new agri-food industry? With so much infrastructure geared toward transferring data, information and ideas up and down the food chain, the new agri-food system is able to listen and respond to every consumer demand. If consumers vote with their pocket books for premium-priced organic vegetables and free range chickens, that's what they'll get. If they vote for low-fat TV dinners, that's what they'll get. If they vote for low-priced, no frills food, that's what they'll get. If anyone controls the new agri-food system it's the consumer, one consumer at a time. Ideas and the application of information technology are harder to control by any one player, and therefore offer more opportunities for everyone to succeed in niche or differentiated product markets. Maine has an opportunity to gear agriculture production taking advantage of these trends. Producer's start by acknowledging that consumers identify the source of their value in a value added product. Knowing what the consumer wants is the first step in any successful business. Communities then need to focus on the infrastructure support necessary to help these farm businesses remain successful.

Agriculture Sector

Agriculture Sector Output

In order to gain an understanding about how much food is consumed a profile of the sector needs to be presented. The USDA Economic Research Service expresses the economic contribution of agriculture as the value added to the US economy via the production of goods and services. This includes crop, animal, and service outputs as well as consumption outlays, government payments such as taxes, and factor payments such as real estate and employee compensation. Final sector output is the gross value of the commodities and services produced within a year. Net farm income is the farm operators' share of income from the sector's production activities. A look at Maine's agricultural sector performance shows a

Food Sales Volume by Type of Store

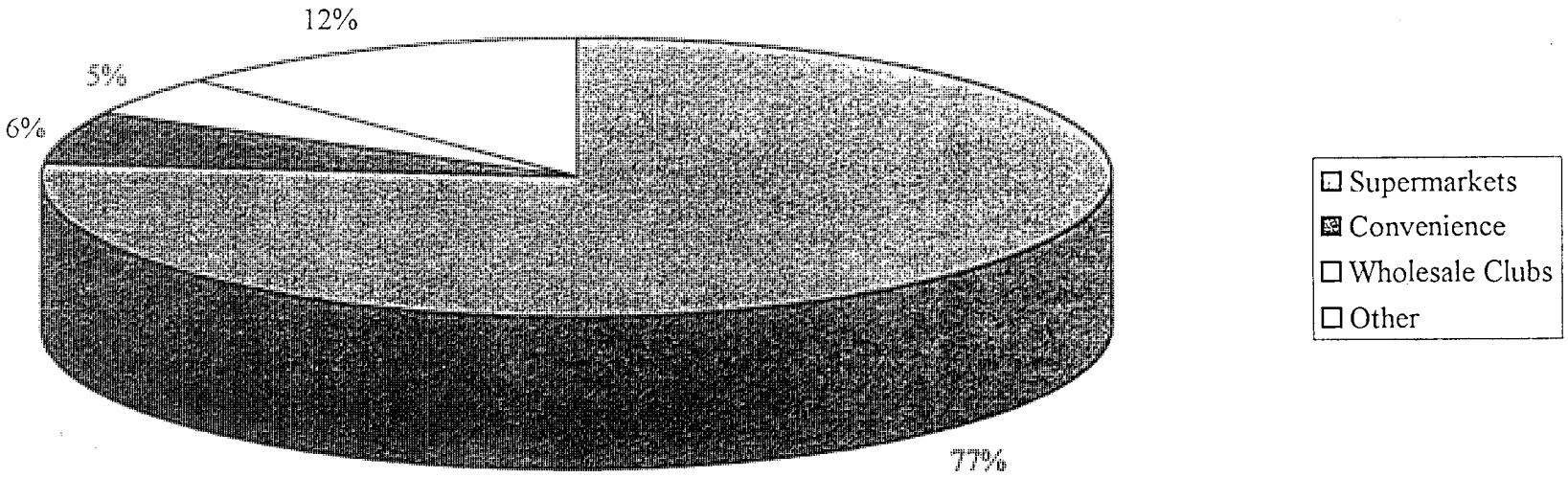

Figure 3

healthy contribution to Maine's economy. Figure 4 shows that Maine agriculture's contribution to the state economy has held fairly steady from 1990 to 1998, yielding a 1.8% increase overall in those years. In 1998, agriculture contributed 557.5 million dollars to the state economy. Figure 5 shows net farm income for the same period. Net farm income declined 54% in that time period to 62.8 million dollars. This is due in large part to an increase in the intermediate consumption outlays (up 28% between 1990 and 1998) and factor payments (up 13.5% between 1990 and 1998). Capital consumption also increased in that same period but only by about 5%. While there appears to be a dramatic difference between agriculture sector output and net farm income, the fact is agriculture generates a significant multiplier effect throughout the rest of the state economy. The farming community purchases extensive products and services from other Maine businesses, and this accounts for much of the gap between farm sector output and net farm income. As a rule of thumb, it is estimated that one dollar spent by a farm will turn over three to five times in the community. For farms in Maine to remain profitable, emphasis must be placed upon increasing the net farm income received by farmers. The best way to accomplish this is to increase the total agricultural sector output, while stabilizing outlays. A positive increase in net farm income would also help attract new entrepreneurs to agriculture, or help existing farms expand.

Per Capita Production

As discussed earlier in this report the use of per capita consumption figures were the easiest to obtain and use to determine a baseline of food consumption at the local level. With this in mind Table 3 presents a profile of foods that are currently produced in Maine expressed in pounds of production.[13] Gaps in the information exist because a particular commodity is not produced in Maine or it is not reported at that level of detail for New England. What Table 3 does do is give an indication as to the variety of products produced and the diversity of the farming community. Conversions to retail weights were made where applicable.[14]

Baseline Methodology

Per Capita Consumption

The information presented so far in this report has tried to develop a case for a much more in depth look at food consumption in Maine. To simply compare the amount of food grown in Maine, and how much of that is eaten locally, to the total food consumption in Maine does not account for the intricacies of the food marketing and distribution system. Nor does it portrait a very good picture of the consuming public and their tastes and preferences. In an attempt to meet the intent of the Agriculture Vitality Legislation, the proposed baseline methodology will be based on per capita consumption of food. This will then be compared to the amount of the food commodity produced in Maine. A comparison between the amount of

[13] Source: New England Agricultural Statistics for 1997 and 1998, USDA National Agriculture Statistic Service.
[14] "Conversion Factors and Weights and Measures: for Agriculture Commodities and Their Products", USDA Economic Research Service, Statistical Bulletin #616.

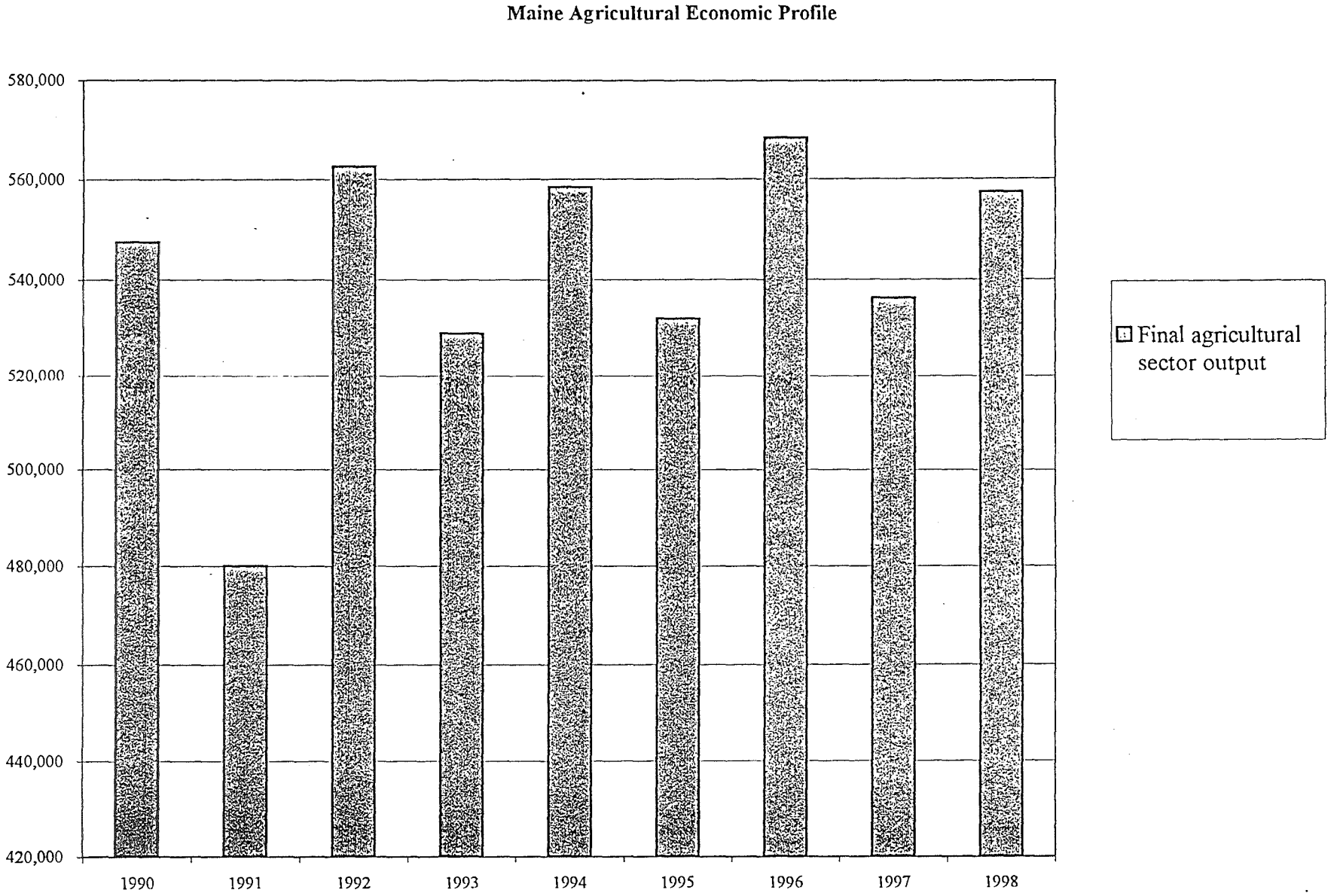
Maine Agricultural Economic Profile
580,000
560,000
540,000
520,000
500,000
480,000
460,000
440,000
420,000
1990
1991
1992
1993
1994
1995
1996
1997
1998
Final agricultural sector output

Figure 4

Maine Agricultural Economic Profile

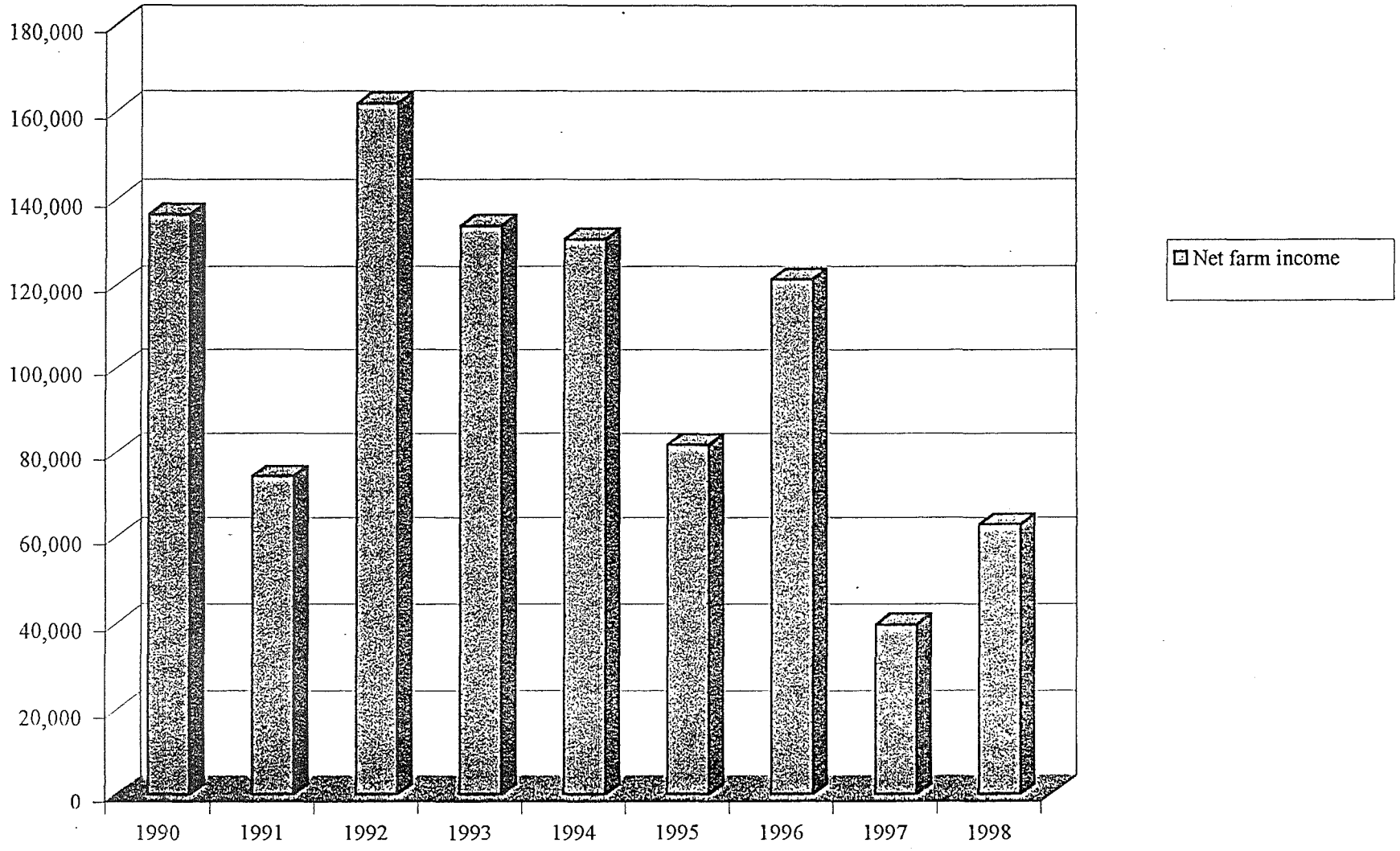

Figure 5

Commodity	1997/1998 Ag Statistics Maine Production (Pounds)
Red Meats	**21,557,667**
Beef	18,968,145
Veal	-
Lamb and Mutton	281,160
Pork	2,308,362
Poultry	**9,636,860**
Chicken	9,459,475
Turkey	177,385
Fish and Shellfish	
Eggs	**179,634,167**
Diary Products (milk equivalent, milkfat basis	**671,000,000**
Cheese (excluding cottage)	
American	
Italian	
Other Cheese	
Cottage Cheese	
Beverage Milks	
Fluid Whole Milk	
Fluid Lower Fat Milk	
Fluid Skim Milk	
Fluid Cream Products	
Yogurt (excluding frozen)	
Ice Cream	
Lowfat Ice Cream	
Frozen Yogurt	
Fats and Oils - Total Fat Content	
Butter and Margarine (product weight)	
Shortening	
Lard and Edible Tallow (direct use)	
Salad and Cooking Oils	
Fruits and Vegetables	
Fruit	**108,640,981**
Fresh Fruits	
Canned Fruit	
Dried Fruit	
Frozen Fruit	
Selected Fruit Juices	

Table 3

Commodity	1997/1998 Ag Statistics Maine Production (Pounds)
Apples	*43,000,000*
Cherries	*1,433*
Grapes	*1,235*
Peaches	*3,215*
Pears	*19,040*
Plums	*8,791*
Blackberries	*7,813*
Tame Blueberries	*605,675*
Wild Blueberries	*62,981,000*
Cranberries	*319,900*
Raspberries	*69,575*
Strawberries	*1,623,304*
Vegetables	
Fresh	
Canning	
Freezing	
Dehydrated and Chips	
Pulses	
Potatoes	*1,596,000,000*
Asparagus	*13,500*
Snap Beans	*337,900*
Beets	*280,000*
Broccoli	*22,750,000*
Brussels Sprouts	*16,000*
Chinese Cabbage	*91,000*
Head Cabbage	*702,000*
Cantaloups	*190,900*
Carrots	*480,000*
Cauliflower	*60,500*
Celery	*54,200*
Chinese Peas	*3,750*
Cucumbers and Pickles	*1,296,000*
Eggplant	*49,500*
Garlic	*136,000*
Herbs	*153,000*
Honeydew Melons	*8,300*
Kale	*64,000*

Table 3

Commodity	1997/1998 Ag Statistics Maine Production (Pounds)
Lettuce and Romaine	*496,000*
Mustard Greens	*15,000*
Dry Onions	*675,000*
Green Onions	*112,500*
Parsley	*17,000*
Green Peas	*7,713,750*
Hot Peppers	*33,600*
Sweet Peppers	*246,400*
Pumpkins	*5,555,000*
Radishes	*259,600*
Rhubarb	*28,000*
Spinach	*19,950*
Squash	*4,596,000*
Sweet Corn	*15,379,000*
Tomatoes	*11,516,200*
Turnip Greens	
Mixed Vegetables	*2,010,000*
Watermelons	*33,200*
Other Vegetables	*1,000,000*
Peanuts (shelled)	
Tree Nuts (shelled)	
Flour and Cereal Products	**68,016,188**
Wheat Flour	1,440,188
Rice (milled basis)	
Oats	*66,576,000*
Caloric Sweeteners	**2,227,166**
Coffee (green bean equivalent)	
Cocoa (chocolate liquor equivalent)	

Table 3

a food commodity consumed on a yearly basis and the amount of food produced will be shown as a percentage of local food available for consumption. However, in order to develop a more accurate baseline over time other factors will need to be taken into account.

In Maine as elsewhere, food consumption is determined by the complexity of the market place and the interaction between supply and demand. In the short run, supplies are based on what is produced at the farm level and are relatively fixed and inflexible. What is produced is consumed. In the case of the major commodities like potatoes or blueberries most of what is produced is exported. For example, as indicated in Table 4 we produce 2,678% more potatoes than we consume in Maine. When supplies go up, price goes down and consumers buy more. Conversely, smaller supplies bring higher prices and smaller purchases. In the long run, farmers adjust production in response to market prices, producing more of higher priced goods and less of lower priced goods. Demand for food in the aggregate is not very responsive to price changes because there is little room for substitution between food and nonfood goods in the consumer's budget. However, demand for individual foods is more responsive to prices as consumers' substitute among alternative food commodities. This entire process is facilitated by the wholesale and retail food industry. A complete baseline methodology would include the interaction between the various food sectors including super markets, restaurants, fast food outlets, and convenience stores.

How the consumer interacts with the food industry and the farmer directly is effected by a number of other factors. Rising incomes increase expenditures on more expensive foods, as consumers demand more convenience and quality. Short-period changes in consumption reflect mostly changes in supply rather than changes in consumer tastes. Demographic factors, such as changes in household size and in the age distribution of the population, can bring about changes in consumption. Consumers vote every day in the marketplace with their dollars, and the market listens carefully to their votes. There is continuous feedback from consumers, who respond to the offerings of marketers trying to meet the perceived wants of consumers. Changes in the makeup of the population, lifestyles, incomes, and attitudes on food safety, health, and convenience have drastically altered the conditions facing farmers and marketers of food products. Food manufacturers and distributors have made vigorous efforts to meet changing consumer wants and needs. These changes in the marketing of farm and food products also have a major impact of any baseline study conducted. As described in more detail earlier, additional research should be done on the effects of demographic and consumer impacts on food consumption.

In order to start the process of examining the food consumption patterns in Maine and how that information can be used to increase the amount of local food consumed, a comparison was made between the amount of a food commodity consumed on a yearly per capita basis to the amount of that food commodity produced, converted to retail weight where applicable. Table 4 details that comparison. Even at this level of analysis, there are a number of ways to look at the data. Table 4 includes the per person consumption data and unless otherwise indicated the table uses data from 1997 and 1998. The population figure used to determine total consumption in pounds is from 1998 estimates. That information could also be displayed as per household. The state planning office has determined that there are

Per Capita Consumption Commodity	Consumption per Person[1] (Pounds)	Maine Population (Estimated)	Total Consumption (Pounds)	1997/1998 Ag Statistics Maine Production (Pounds)	Percent Available for Consumption
Red Meats	**115.6**	**1,244,250**	**143,835,300**	**21,557,667**	**15.0%**
Beef	64.9	1,244,250	80,751,825	18,968,145	23.5%
Veal	0.7	1,244,250	870,975	-	0.0%
Lamb and Mutton	0.9	1,244,250	1,119,825	281,160	25.1%
Pork	49.1	1,244,250	61,092,675	2,308,362	3.8%
Poultry	**65.0**	**1,244,250**	**80,876,250**	**9,636,860**	**11.9%**
Chicken	50.8	1,244,250	63,207,900	9,459,475	15.0%
Turkey	14.2	1,244,250	17,668,350	177,385	1.0%
Fish and Shellfish	**14.8**	**1,244,250**	**18,414,900**		**0.0%**
Eggs	**31.4**	**1,244,250**	**39,069,450**	**179,634,167**	**459.8%**
Diary Products (milk equivalent, milkfat basis)	**582.3**	**1,244,250**	**724,526,775**	**671,000,000**	**92.6%**
Cheese (excluding cottage)	28.4	1,244,250	35,311,815		0.0%
American	12.2	1,244,250	15,229,620		0.0%
Italian	11.3	1,244,250	14,109,795		0.0%
Other Cheese	4.8	1,244,250	5,972,400		0.0%
Cottage Cheese	2.7	1,244,250	3,359,475		0.0%
Beverage Milks	204.5	1,244,250	254,449,125		0.0%
Fluid Whole Milk	71.6	1,244,250	89,088,300		0.0%
Fluid Lower Fat Milk	98.5	1,244,250	122,558,625		0.0%
Fluid Skim Milk	34.4	1,244,250	42,802,200		0.0%
Fluid Cream Products	9.2	1,244,250	11,447,100		0.0%
Yogurt (excluding frozen)	5.1	1,244,250	6,345,675		0.0%
Ice Cream	16.6	1,244,250	20,654,550		0.0%
Lowfat Ice Cream	8.3	1,244,250	10,327,275		0.0%
Frozen Yogurt	1.9	1,244,250	2,364,075		0.0%

Table 4

Per Capita Consumption Commodity	Consumption per Person[1] (Pounds)	Maine Population (Estimated)	Total Consumption (Pounds)	1997/1998 Ag Statistics Maine Production (Pounds)	Percent Available for Consumption
Fats and Oils - Total Fat Content	**66.5**	**1,244,250**	**82,742,625**		**0.0%**
Butter and Margarine (product weight)	12.5	1,244,250	15,553,125		0.0%
Shortening	20.9	1,244,250	26,004,825		0.0%
Lard and Edible Tallow (direct use)	5.2	1,244,250	6,470,100		0.0%
Salad and Cooking Oils	27.9	1,244,250	34,714,575		0.0%
Fruits and Vegetables	**712.3**	**1,244,250**	**886,279,275**		**0.0%**
Fruit	**293.9**	**1,244,250**	**365,685,075**	**108,640,981**	**29.7%**
Fresh Fruits	129.9	1,244,250	161,628,075		0.0%
Canned Fruit	17.2	1,244,250	21,401,100		0.0%
Dried Fruit	12.9	1,244,250	16,050,825		0.0%
Frozen Fruit	5.0	1,244,250	6,221,250		0.0%
Selected Fruit Juices	128.9	1,244,250	160,383,825		0.0%
Apples	*18.5*	*1,244,250*	*23,018,625*	*43,000,000*	*186.8%*
Cherries	*0.5*	*1,244,250*	*622,125*	*1,433*	*0.2%*
Grapes	*7.3*	*1,244,250*	*9,083,025*	*1,235*	*0.01%*
Peaches	*5.4*	*1,244,250*	*6,718,950*	*3,215*	*0.0%*
Pears	*3.3*	*1,244,250*	*4,106,025*	*19,040*	*0.5%*
Plums	*1.5*	*1,244,250*	*1,866,375*	*8,791*	*0.5%*
Blackberries	*0.1*	*1,244,250*	*124,425*	*7,813*	*6.3%*
Tame Blueberries	*0.33*	*1,244,250*	*410,603*	*605,675*	*147.5%*
Wild Blueberries	*0.5*	*1,244,250*	*622,125*	*62,981,000*	*10123.5%*
Cranberries	*0.1*	*1,244,250*	*124,425*	*319,900*	*257.1%*
Raspberries	*0.12*	*1,244,250*	*149,310*	*69,575*	*46.6%*
Strawberries	*4.2*	*1,244,250*	*5,225,850*	*1,623,304*	*31.1%*
Vegetables[2]	**418.4**	**1,244,250**	**520,594,200**	**76,392,750**	**14.7%**

Table 4

Per Capita Consumption Commodity	Consumption per Person[1] (Pounds)	Maine Population (Estimated)	Total Consumption (Pounds)	1997/1998 Ag Statistics Maine Production (Pounds)	Percent Available for Consumption
Fresh	186.5	1,244,250	232,052,625		0.0%
Canning	108.0	1,244,250	134,379,000		0.0%
Freezing	82.6	1,244,250	102,775,050		0.0%
Dehydrated and Chips	32.9	1,244,250	40,935,825		0.0%
Pulses	8.4	1,244,250	10,451,700		0.0%
Potatoes	*47.9*	*1,244,250*	*59,599,575*	*1,596,000,000*	*2677.9%*
Asparagus	*0.6*	*1,244,250*	*746,550*	*13,500*	*1.8%*
Snap Beans	*1.3*	*1,244,250*	*1,617,525*	*337,900*	*20.9%*
Beets	*0.1*	*1,244,250*	*124,425*	*280,000*	*225.0%*
Broccoli	*4.8*	*1,244,250*	*5,972,400*	*22,750,000*	*380.9%*
Brussels Sprouts	*0.3*	*1,244,250*	*373,275*	*16,000*	*4.3%*
Chinese Cabbage		*1,244,250*	-	*91,000*	*#DIV/0!*
Head Cabbage	*9.5*	*1,244,250*	*11,820,375*	*702,000*	*5.9%*
Cantaloups	*10.8*	*1,244,250*	*13,437,900*	*190,900*	*1.4%*
Carrots	*12.1*	*1,244,250*	*15,055,425*	*480,000*	*3.2%*
Cauliflower	*1.5*	*1,244,250*	*1,866,375*	*60,500*	*3.2%*
Celery	*5.6*	*1,244,250*	*6,967,800*	*54,200*	*0.8%*
Chinese Peas		*1,244,250*	-	*3,750*	*#DIV/0!*
Cucumbers and Pickles	*11.1*	*1,244,250*	*13,811,175*	*1,296,000*	*9.4%*
Eggplant	*0.4*	*1,244,250*	*497,700*	*49,500*	*9.9%*
Garlic	*1.7*	*1,244,250*	*2,115,225*	*136,000*	*6.4%*
Herbs		*1,244,250*	-	*153,000*	*#DIV/0!*
Honeydew Melons	*2.4*	*1,244,250*	*2,986,200*	*8,300*	*0.3%*
Kale	*0.2*	*1,244,250*	*248,850*	*64,000*	*25.7%*
Lettuce and Romaine	*28.2*	*1,244,250*	*35,087,850*	*496,000*	*1.4%*

Table 4

Per Capita Consumption Commodity	Consumption per Person[1] (Pounds)	Maine Population (Estimated)	Total Consumption (Pounds)	1997/1998 Ag Statistics Maine Production (Pounds)	Percent Available for Consumption
Mustard Greens		*1,244,250*	-	*15,000*	*#DIV/0!*
Dry Onions	*16.8*	*1,244,250*	*20,903,400*	*675,000*	*3.2%*
Green Onions		*1,244,250*	-	*112,500*	*#DIV/0!*
Parsley		*1,244,250*	-	*17,000*	*#DIV/0!*
Green Peas	*3.5*	*1,244,250*	*4,354,875*	*7,713,750*	*177.1%*
Hot Peppers	*5.2*	*1,244,250*	*6,470,100*	*33,600*	*0.5%*
Sweet Peppers	*6.7*	*1,244,250*	*8,336,475*	*246,400*	*3.0%*
Pumpkins	*5.2*	*1,244,250*	*6,470,100*	*5,555,000*	*85.9%*
Radishes	*0.4*	*1,244,250*	*497,700*	*259,600*	*52.2%*
Rhubarb		*1,244,250*	-	*28,000*	*#DIV/0!*
Spinach	*0.5*	*1,244,250*	*622,125*	*19,950*	*3.2%*
Squash	*0.7*	*1,244,250*	*870,975*	*4,596,000*	*527.7%*
Sweet Corn	*7.4*	*1,244,250*	*9,207,450*	*15,379,000*	*167.0%*
Tomatoes	*16.1*	*1,244,250*	*20,032,425*	*11,516,200*	*57.5%*
Turnip Greens		*1,244,250*	-		*#DIV/0!*
Mixed Vegetables		*1,244,250*	-	*2,010,000*	*#DIV/0!*
Watermelons	*14.5*	*1,244,250*	*18,041,625*	*33,200*	*0.2%*
Other Vegetables		*1,244,250*	-	*1,000,000*	*#DIV/0!*
Peanuts (shelled)	**5.8**	**1,244,250**	**7,216,650**		**0.0%**
Tree Nuts (shelled)	**2.2**	**1,244,250**	**2,737,350**		**0.0%**
Flour and Cereal Products	**167.3**	**1,244,250**	**208,163,025**	**68,016,188**	**32.7%**
Wheat Flour	147.8	1,244,250	183,900,150	1,440,188	0.8%
Rice (milled basis)	19.5	1,244,250	24,262,875		0.0%
Oats	*6.5*	*1,244,250*	*8,087,625*	*66,576,000*	*823.2%*
Caloric Sweeteners	**154.1**	**1,244,250**	**191,738,925**	**2,227,166**	**1.2%**

Table 4

Per Capita Consumption Commodity	Consumption per Person[1] (Pounds)	Maine Population (Estimated)	Total Consumption (Pounds)	1997/1998 Ag Statistics Maine Production (Pounds)	Percent Available for Consumption
Coffee (green bean equivalent)	**9.3**	**1,244,250**	**11,571,525**		**0.0%**
Cocoa (chocolate liquor equivalent)	**4.1**	**1,244,250**	**5,101,425**		**0.0%**

Footnotes:

1 - Source: 1999 New England Agriculture Statistics, USDA National Agriculture Statistics Service

2 - Column 4 Vegetable Total Excludes Potatoes

Table 4

495,000 households in Maine. This would present the data in a different context but the final consumption figures would be the same. Per capita consumption includes all sources of food.

Red meat consumption in Maine currently stands at about 144 million pounds. When compared to the amount of red meat produced, we find that Maine farmers contribute about 15% of Maine's needs. However, it is impractical to determine how much of the 21,557,667 pounds of Maine red meat actually makes it to the consumer. Since federally inspected slaughter facilities are few in Maine, much of the current supply is shipped out of Maine to other parts of the country. Poultry consumption is about 81 million pounds with Maine contributing about 12% of that through local production. Finally, eggs are a net gain for Maine since our production exceeds consumption by 460%, making Maine an exporter of eggs.

Dairy products are the next major category in Table 4. Unfortunately, the data collected at the state level represents the total amount of diary products as milk equivalent and milkfat basis. National figures are available for the specific dairy products contained in the table. Maine does very good at supplying its own dairy needs with approximately 93% of the amount consumed in Maine coming from Maine dairy farms. This is qualified by that fact that the major companies in the diary sector control the processing, distribution, and marketing of milk. For instance, very little of the cheese consumed in Maine is produced in Maine. It may be that milk shipped out of Maine to a cheese manufacturer arrives back in Maine at the grocery store but there is no way of knowing where the raw product actually came from.

Fruits and vegetables are the other major category where figures could be compared. Here we have a situation where the major commodities like wild blueberries and potatoes are produced in excess of what is consumed while all other fruits and vegetables represent a deficit. The notable exceptions would be commodities like apples, cranberries, broccoli, peas and sweet corn. Here we may find room for expanding the consumption of locally grown product but often time's variations in the consumption of fruits and vegetables is a function of diet and consumer preferences.

The final categories where we have some impact on food consumption are flour products and caloric sweeteners. Oat production represents a surplus in the flour category. We produce approximately 823% more product than consumed. Caloric sweeteners such as maple syrup and honey however only account for 1.2% of our sweetener intact. Again as in the previous categories, consumer tastes and preferences often dictate the type of food commodity consumed and where it is purchased. In the case of the fats and oils, peanuts, tree nuts, coffee and coca categories there either is no production in Maine or it is statistically low enough to not disclose.

At this point, per capita consumption of food commodities is as good an indicator as practical in determining where Maine has growth potential in food production. The information is readily available from USDA National Agriculture Statistics Service and is easily compared to production figures for the same commodities. Per capita consumption should be viewed as a snap shot of the food consumed in Maine and can provide benchmarks

for the areas of potential expansion in production of certain commodities. However, it does not take into account the buying habits and preferences of consumers which as we have discovered in preparing this report are the critical elements in successfully measuring consumption and devising strategies to expand local consumption.

Conclusions and Recommendations

Maine has a strong background in agriculture and the ability to produce quality commodities. What we can do a better job with is producing niche food products that the consumer market is demanding. This is where the real potential is for expansion of the agriculture sector in Maine. Just like manufacturing has experienced, agriculture needs to move from mass production to mass customization. Our lessons are learned from the giant retailers who can market what is otherwise a "staple" commodity by creating value for it by simply customizing it to consumer tastes and preferences. It is the intent of this report to set basic base line data in context with the ever-changing market place.

The base line data will only prove important when we understand and respond to the consumer market in a way that is proactive rather than reactive. The success of agriculture in the future may be determined more by engagement in effective marketing and product innovation than the ability to continue to improve yields to meet consumption. In contrast things like intellectual property rights will become important to agriculture development. Also, as an economic development tool, agriculture may be one way to help make communities more successful which in turn will help people (young people in particular) feel they can stay. The purpose of focusing on business development, rather than consumption of food commodities, is to become more visionary in the role of agriculture in future economic development. The interface between agriculture (which represents human capital applications in conjunction with environmental capital) and social capital (as defined by the community fabric of a region) is the critical element in the success of such a vision. The focus will be on working with people who want to expand business or create new businesses and help them think through their ideas.

Current trends indicate that changes in consumer tastes and preferences, advances in communications and information technology, and new distribution models offer agriculture enterprises better opportunities than ever before to expand and prosper. There are also opportunities for new entrepreneurs to take a second look at agriculture as the business of the new millennium. These advancing technologies along with higher expectations from consumers, tax payers, rural residents, and business owners are primary forces causing farmers to implement strategies that will move the industry from producing commodities to producing differentiated products for an ever changing marketplace. This means that agriculture not only needs to be efficient but also needs to monitor and respond to changes in consumer non-price preferences such as nutrition, safety and convenience. With the introduction of information technology and the Internet, agriculture is moving from a "mass production" or commodity focus to a "mass customization" or consumer oriented focus.

Overall, industrialization of the agriculture sector will continue as technology advances in production, communications, and transportation. Globalization will also have a profound impact on the pace and size of industrialization in the sector. An integrated production system will work well in areas where it is easily adopted and serve to continue providing basic commodities. These areas may or may not be in Maine. Which leads to creating a situation where those in the position of making and moving "commodities" are being put in a position to get bigger in order to survive. Maine agriculture on the other hand would be best served to pursue a strategy of specializing and offering differentiated products directly to consumers or providing inputs into larger integrated production systems. The question then becomes "How can we use production, communication, and transportation technologies coupled with an understanding of consumers to market differentiated products from our communities?"

Currently there are four opportunities for farmers.

1) High volume, low cost producer of an undifferentiated commodity
2) Identify specialty product markets that offer above average profits
3) Networking with other producers to create critical mass in production and marketing of products, commodities, or specialty products
4) Contractual arrangements with processors, represented by integrated systems.

A successful business and economic development strategy will see all four opportunities being used in a region. Agricultural businesses and communities can not rely on just one or two of these opportunities. We must also move conceptually away from the traditional mass production mind set to the mass customization of the new and future consumer market.

To support these conclusions, and begin reshaping agriculture's future in Maine, the following recommendations are provided for consideration.

- It is recommended that additional research be done in tracking and understanding the demographics of consumer habits and spending to get a more accurate picture of food consumption in Maine.

- In order to develop strategies for expanding the amount of local food consumed, there needs to be information collected on the effects age and other demographic data have on food consumption. This will help with the implementation of long term changes designed to increase the amount of Maine food consumed.

- It is important to understand the economic conditions projected for the future in order to develop sound strategies for increasing the amount of local food consumed.

- In the end it will take finding a balance between value added processing that can meet the demands of consumers and a changing of consumer preferences and habits that will help increase the amount of local food consumed.

- It is imperative that more effort is put into tracking consumer trends and preferences, and investing more in marketing initiatives.

- A complete baseline methodology would include the interaction between the various food sectors including super markets, restaurants, fast food outlets, and convenience stores, as well as the farmer.

- It is suggested that changes in farm gate receipts be used to measure the impact these recommendations would have if implemented. In other words, by researching the consumer market in Maine, analyzing the data collected and translating it into useful information for the farm sector, farms in Maine should then be able to adjust to value added or differentiated products to increase receipts.

As outlined in this report, understanding consumer markets and how today's food marketing and distribution system responds to consumer demands is an important ingredient for success in Maine's agriculture community. With information on consumer's and marketing, farmers can more effectively capitalize on value added opportunities or shift their farm's focus to increase net farm income. It should be our ultimate goal to help facilitate the increase in farm gate receipts thus increasing net farm income. In order to accomplish this goal, it is the conclusion of this work that we build upon the baseline method of gauging how much Maine food is consumed locally, and extensively study the consumer market in Maine. The information on consumer markets and the food system in general can then be translated into usable information that the agriculture sector can use to succeed.