

MAINE STATE LEGISLATURE

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Wild Blueberries



Wild Blueberry Commission OF MAINE

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October 28, 2005

Joint Standing Committee on Agriculture, Conservation and Forestry
100 State House Station
Augusta, ME 04333-0100

Dear Senator Nutting, Representative Piotti and Distinguished Committee members:

Following is our report to the legislature on the programs of the Wild Blueberry Commission of Maine and Wild Blueberry Advisory Committee. Through the Wild Blueberry Commission, Maine's Wild Blueberry growers and processors have a vehicle to provide resources to improve Maine's Wild Blueberry businesses. This relationship created by the legislature at the request of growers, dates back about 60 years.

Targeting resources at research and extension, promotion and policy issues facing Maine's Wild Blueberry growers and processors has helped to provide the foundation upon which Maine's growers have almost quadrupled their yields in recent history while at the same time increasing the total revenues of Maine's Wild Blueberry businesses.

I look forward to answering any questions you may have through the review process on behalf of the Commission and Advisory Committee. We look forward to continuing this public, private partnership for the future prosperity of Maine's Wild Blueberry growers and processors and the prosperity of the State of Maine.

Very Truly Yours,

David K. Bell
Executive Director

CC: Roy Allen, Chairman, Wild Blueberry Commission of Maine
Delmont Merrill, Vice Chairman, Wild Blueberry Commission of Maine



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EXECUTIVE SUMMARY

The following program evaluation report for the Wild Blueberry Commission of Maine and the Wild Blueberry Advisory Committee is submitted to the Joint Select Committee on Agriculture, Conservation and Forestry in fulfillment of the "State Government Evaluation Act".

At this point in time the future prospects for Maine's Wild Blueberry growers and processors are very good. Recently, through the application of research conducted at the University of Maine and extension outreach, growers have almost quadrupled Maine's production of Wild Blueberries. Strategic promotional decisions made to develop a brand identity for Wild Blueberries coupled with development and implementation of health promotion strategies has resulted in favorable markets for Wild Blueberries.

The late 1990's were a prosperous time in Maine's Wild Blueberry business. Crop sizes were increasing moderately and demand was growing consistently resulting in consistent revenues. Since the turn of the century it has been a challenging time economically. The period 2000-2003 saw a "leap in supply" of Wild Blueberries during an economically soft period which resulted in weak prices. Since then demand has been increasing and is now strong, however, small Maine crops in 2004 and 2005 have limited revenues. Thanks to promotion, market prospects are strong for the next few years barring macro economic disruptions. Growers now need mother nature's cooperation to reap moderately large crops and return to favorable revenue levels.

In order to keep the Wild Blueberry business strong, regular investments will need to be made in research, extension, promotion and other issues as they arise. Maine agriculture will need policy support from the Legislature in key areas such as sustainable water sources, research and development, crop protectant use and land use policies that support agricultural production.

The support of the Legislature for Maine's Wild Blueberry growers and processors has been strong. Recently the Commission was reorganized as a public instrumentality of the state, the theft law was strengthened, and industry funding increased. Recent support for research and development especially the "jobs bond funds" for UMaine's Blueberry Hill Farm will help to solidify the foundation of Maine's Wild Blueberry businesses. We thank the Legislature for its' past and recent support and look forward to working with the Legislature on future issues of importance to Maine's Wild Blueberry growers and processors.

Table of Contents

Executive Summary	
1	Program Evaluation Report <i>Page</i>
	I. Introduction..... 1
	II. Wild Blueberry Commission Programs..... 2
	III. Emerging Issues..... 12
	IV. Administrative Efficiencies and Outreach..... 13
2	Figures
3	Appendix A - Statute, Title 36, Chapter 701
4	Appendix B - Promotional Brochures
5	Appendix C - Wild Blueberry Ads
6	Appendix D - Poster and Placemats
7	Appendix E - Wild Blueberry Lesson Kit
8	Appendix F - Financial Summary

Table of Contents

1	PROGRAM EVALUATION REPORT
2	FIGURES
3	APPENDIX A Statute, Title 36, Chapter 701
4	APPENDIX B Promotional Brochures
5	APPENDIX C Wild Blueberry Ads
6	APPENDIX D Poster and Placemats
7	APPENDIX E Wild Blueberry Lesson Kit
8	APPENDIX F Financial Summary

I. INTRODUCTION

Purpose and Goals of the Wild Blueberry Commission of Maine

The mission of the Wild Blueberry Commission of Maine is to provide the foundation upon which Maine's Wild Blueberry growers and processors can build profitable businesses. Title 36, section 4301 states the purpose as: "The production and marketing of wild blueberries is one of the most important agricultural industries of the State, and this chapter is enacted into law to **conserve and promote the prosperity and welfare of this State and of the wild blueberry industry of this State by fostering research and extension programs, by supporting the development of promotional opportunities and other activities related to the wild blueberry industry**" (emphasis added). The full statute related to both the Wild Blueberry Commission of Maine and the Wild Blueberry Advisory Committee is contained in Appendix A.

Organizational Structure

The Wild Blueberry Commission of Maine serves the priority needs of Maine's Wild Blueberry growers and processors. The Commission appoints the Wild Blueberry Advisory Committee (figure 1) to set research priorities and make research recommendations. This committee also works to obtain research grants and supports the grant writing of wild blueberry researchers.

The Commission achieves its promotional objectives through the Wild Blueberry Association of North America (WBANA). Annually the Commission makes grants to fund WBANA's operating plan for Wild Blueberry promotion.

The Commission employs a full time executive director to plan and execute other activities of the Commission, provide staff support to the Advisory Committee, and to administer the business of the Commission. Currently the Commission provides administrative staff support to the executive director.

II. WILD BLUEBERRY COMMISSION PROGRAMS

Research and Extension

Research and extension is the foundation upon which Maine's Wild Blueberry businesses are built. Extension (University of Maine Cooperative Extension Service) has been and is the traditional development arm for agricultural research.

Our modern day research and extension relationship with the University of Maine dates back to 1945 when Maine's (wild) blueberry growers approached the Legislature to self impose a tax to raise funds for blueberry research. Research and extension has provided the information for Maine's growers to almost quadruple their crop in the last 25 years (figure 2). It has also provided information to Maine processors which has assisted them in developing state of the art processing facilities to produce a product of ever increasing quality.

Maine's Wild Blueberry research and extension program is guided by the University of Maine System Wild Blueberry Advisory Committee (WBAC). The WBAC is a standing committee of the Wild Blueberry Commission. The seven members of WBAC are appointed by the Wild Blueberry Commission for four year staggered terms. The WBAC sets the strategic direction, makes annual funding recommendations, and monitors the progress of Wild Blueberry research and extension programs.

Research recommendations are developed through an iterative process with researchers whereby challenges facing the industry are discussed, and pre-proposals are developed by researchers. Final research proposals are submitted to the WBAC. The Committee then makes research recommendations which are forwarded to the Dean of the University of Maine's College of Natural Sciences Forestry and Agriculture and the Director of the Maine Agricultural and Forestry Experiment Station.

Currently, funding for projects comes from the Wild Blueberry tax funds dedicated for research and extension, the wild (lowbush) blueberry grant from the United States Department of Agriculture's (USDA) Cooperative State Research Education & Extension Service (CSREES) and base funding from the University of Maine which includes both State and Federal funds. For a decade and a half, the WBAC has worked closely with Maine's congressional delegation and the University to obtain the USDA CSREES research grant for wild (lowbush) blueberry research. Wild Blueberry tax funds coupled with CSREES grants have resulted in over \$3 million in operating research funds invested at the University of Maine for Wild Blueberry research and extension over the last 10 years.

Maine's Wild Blueberry growers and processors fully understand the need for a strong research and development (Extension) program in order to maintain and grow Maine's Wild Blueberry businesses in an increasingly competitive global

market place. Because of this understanding and the concern about funding cuts at the University of Maine in the early 1990's that were impacting critical agricultural research needs at the University, the Wild Blueberry Commission and Advisory Committee became involved in the State's R&D initiative eight years ago.

In 1999, the Advisory Committee formed a committee of industry representatives and researchers to look comprehensively at the functions of Blueberry Hill Farm, the University's Wild Blueberry research station in Jonesboro. This station is the center for field research conducted on and for Wild Blueberries. Extensive work is done on fields at the research farm and the station serves as a base of operations for research conducted on grower's fields from mid-coast to downeast Maine. When the station was built in the mid 1940's a multifunctional building was constructed to house three labs, office space and a shop in the basement. The committee recognized that infrastructure upgrades were needed at the farm. Some needs such as better planning, additional land, and a commitment to irrigation infrastructure were relatively easy to address. The recommendation to completely renovate two labs at the facility was a bigger challenge.

Research into Integrated Crop Management (ICM) techniques (knowledge based farming practices) requires more sophisticated research often coupling a laboratory component with field investigations. The Advisory Committee recognized that the labs at the facility had not functioned as labs for many years as they had become extremely outdated. They were so outdated they could not have been used for high school chemistry. The lab support functions were being conducted in Orono over two hours away leading to inefficiencies and in some cases a quality loss in work done.

When the Commission approached the University administration responsible for research and development (R&D) with the lab renovation need in the late 1990's, we were told that the project could be fit in easily with other R&D capital projects at the University. However, as the conceptual planning progressed the industry committee soon realized a new facility would be needed because renovation of the labs would also require all new utilities in the building, Americans with Disabilities Act compliant bathrooms, an elevator due to the split level construction, and the shop would need to be moved out of the building as welding is not compatible with modern laboratory science. When the University administration (above the College of Natural Sciences Forestry and Agriculture) was approached with the revised facility need, interest and commitment waned. When the Commission approached the University of Maine Chancellor with the challenge, the Commission was counseled that if this was a priority of the industry it should ensure that the funding is raised.

Over the course of three years the Commission worked to raise over 1 million dollars for the facility. Maine's delegation was successful in obtaining \$330,000 in funding from Congress across two budget years and the Commission worked closely with the Maine Legislature to include 1 million dollars in the 2003 "jobs

bond” for capital projects at UMaine research farms of which \$600,000 went to Blueberry Hill Farm with the remainder accomplishing projects at the other farms. Maine’s Wild Blueberry growers and processors contributed the balance through allocation of Wild Blueberry tax funds from the Commission.

The new lab facility (figure 3) was completed in the fall of 2005 with the new shop facility being completed the year before (figure 4). This was a major long term capital improvement that will support research work funded through grants and base funding for decades to come. Without this updated facility, future grant funding and the effectiveness and efficiency of the whole research program would be in jeopardy.

We appreciate the Legislature’s recent significant appropriations for R&D especially the “jobs bond” of the 121st Legislature that helped to fund the Blueberry Hill Farm renovation and look forward to working with the Legislature into the future to build on recent R&D initiatives. We as a State must invest research and development dollars in our natural resource business similar to other business sectors in order to increase the economic potential of them.

Promotion

Promotion is a priority of Maine’s Wild Blueberry growers and processors. The majority of the Commissions financial resources go to promotion. The Commission accomplishes it’s promotion objectives through the Wild Blueberry Association of North America (WBANA).

The Wild Blueberry Association is a unique organization in that it is a promotion organization for Wild Blueberries grown in Maine, Quebec and the Canadian Maritime Provinces. Maine produces approximately half of the commercially grown Wild Blueberries and the Canadian Provinces account for the other half. Maine’s Wild Blueberry growers have made the strategic decision in their definition of the key competitors in the market place and joined forces with Canadian growers and processors to compete against other fruits in the global market place. Currently, there are two operating associations one in Maine and the other in Canada. Maine has taken the primary responsibility of promoting Wild Blueberries in the U.S. market, the largest single market, while Canada focuses on off shore promotion. The two organizations share promotion in some strategic areas. For example, WBANA-USA is taking the lead in fostering the health program, the under pinning of “The Wild Blueberry Health Story”, with WBANA-CA committing to funding half the effort.

As Legislators, you are aware of the business challenges that Maine’s natural resource businesses such as Christmas trees and wreaths, forest products, lobsters and potatoes face when they have to compete with Canada’s economic system and recent extremely unfavorable Canadian exchange rates. Maine’s Wild

Blueberry businesses face the same challenges, however, they have decided that by creating large enough global demand for Wild Blueberries both Maine's and Canada's Wild Blueberry businesses can be successful. For over 20 years, Maine's growers and processors have taken a leadership role in developing the potential of WBANA. Up until the early 1990's Maine's Wild Blueberry growers and processors supported blueberry promotion through both WBANA and the North American Blueberry Council (NABC), which included cultivated blueberries grown in the United States and Canada.

Cultivated blueberries have a different growing system and market niche. Their large size is an advantage when marketing directly to the consumers because most consumers "buy with their eyes" and therefore many are sold fresh. Wild Blueberries have advantages over the cultivated berry such as superior taste and superior performance in baked goods due to a smaller size. Wild Blueberries are primarily a frozen product.

In the early 1990's, Maine and Canada's Wild Blueberry growers and processors made the strategic decision to break away from the North American Blueberry Council, hire a professional promoter, develop a brand identity for Wild Blueberries to differentiate Wild from cultivated in the market place. The objective was to create demand for Wild Blueberries in the market place which results in strong prices for Wild Blueberry growers and processors.

In 1994 WBANA launched Operation: Wild Blueberry. During the next couple of years the focus of WBANA was to develop the Wild Blueberry brand identity package and take the message to market. The basic idea behind the brand identity package is to make the added value of Wild Blueberries easily understood and recognizable in the market place such that our customers are willing to pay more for Wild Blueberries.

In the front of the left hand corner of the cover of "The New Health Advantage" (Appendix B) is the Wild Blueberry certification mark which incorporates the imagery of downeast. A critical selling component of the brand identity package is the tag line "Nature's Great Taste" on the certification mark. Another component of the package is "The Wild Ones", Wild Blueberry characters on pages 2 and 3 inside "The Advantage". In review of the collateral material developed over the last few years you will notice that components of the Wild Blueberry brand identity are woven through all the pieces.

The Wild Blueberry Brand identity package is used by WBANA and Wild Blueberry businesses in a variety of ways to bring the Wild Blueberry message to market. Wild Blueberries are sold primarily to the trades as an ingredient in range of products such as baked goods or other packaged foods such as whole fruit in glass jars in Germany and jams in Japan.

During 1996 and 1997 WBANA placed many advertisements in bakery trade magazines and attended industry trade shows. Collateral materials were supplied to Wild Blueberry sellers and WBANA coached sellers about the value inherent and created for Wild Blueberry products. One key strategy employed is to license the Wild Blueberry certification mark to Wild Blueberry customers in the trades for use on their packages. The mark adds value to their product and makes it harder for them to substitute cultivated blueberries in their products. Many Japanese products use the certification mark.

In 1996 and 1997 Wild Blueberry growers and processors become aware of the exciting health research that was being conducted on blueberries. In 1997 the strategic decision was made to take this exciting news to market before our competitors did. Plans were developed to work with researchers to understand their work, translate the results into health messages the consumer could understand, and develop a low cost strategy to take the message to market. The health story has provided Wild Blueberry businesses a low cost vehicle to reach millions of consumers through the media.

Over the last eight years thousands of articles in newspapers, numerous radio and television stories, and articles in health related magazines have been driven by Wild Blueberry businesses through WBANA. There is no doubt that this amount of exposure for blueberries has been worth millions of dollars per year. While this strategy was cost effective, it required WBANA to shift resources from advertisements and trade shows in the late 1990's. During this time period, there were not the resources to develop focused programs for other market segments such as the food service trade, to promote effectively to the bakery trades or promote Wild Blueberries in consumer retail markets.

In the 1999 report to the Legislature, the Commission noted the challenge of funding for effective promotion. After two years of careful consideration the Commission and the industry requested in 2001 that the Legislature increase the Wild Blueberry tax to 1.5 cents per pound to increase the commitment to promotion and other key programs. This was accomplished successfully with strong support from the Legislature.

The current promotional program has three main components. The first is "The Health Story" surrounding Wild Blueberries. Through WBANA we support the efforts of researchers around North America and most importantly translate the research work into health messages the average person can understand. Over the last eight years the core commitment of the promotion program has been to a public relations effort to generate the media articles that raise awareness to the benefits of consuming blueberries and Wild Blueberries. The two other components of the promotion program focus on the trade and now, consumer markets. In both cases the health story creates awareness and builds demand for the product. Through

targeted advertising and carefully selected trade shows both in the “trades” and “consumer” markets we bring the Wild Blueberry Advantages to market.

The increased funding has allowed for an increased commitment to trade shows and advertising in key trade publications such as “Modern Baking” and consumer publications such as “Health Magazine.” The “Not Just Blueberries... Wild Blueberries” ad in Appendix C is an example of an ad placed in trade magazines. This 2005 ad has 3 major messages; first differentiating Wild Blueberries from others, outlining the trade ingredient “advantages” of Wild Blueberries including health and communicating the number one antioxidant fruit message.

Increased funding has given the Commission resources to work through WBANA to begin promotion to the consumer market which is a new focus for Wild Blueberries. First a strategy was developed to “own a day part”. Because of the many attributes of Wild Blueberries the industry chose breakfast. The ad “Introducing Wild Blueberries THE BREAKFAST BERRIES™” (Appendix C) delivers the message to start your day with Wild Blueberries, promotes the quick and easy use of frozen Wild Blueberries, links to the health story, and informs consumers that Wild Blueberries can be purchased year-round in supermarkets. The ad “Get your Daily Dose of Blue” (Appendix C) was an earlier ad that was placed in health magazines to create interest and awareness in Wild Blueberries and to promote the daily incorporation of Wild Blueberries into the consumer’s diet.

During 2005 trade ads were placed in “Modern Baking”, “New Products”, “Nutraceutical World”, “Progressive Grocer”, “Restaurant Business”, “Food Service Director”, “Snack Foods”, “New Products”, “Food Products Design”, “Food Technology”, and Progressive Grocer’. Consumer advertising was focused on “Health Magazine”.

The other main promotional objective in raising more funds was to be able to afford to participate in more trade shows. This objective was also achieved. In 2005, Wild Blueberries were promoted at the Retail Bakers Association, Food Marketing Institute, National Restaurant Association, Institute of Food Technologists, and the American Dietetics trade shows. This was the largest trade show effort since the mid 1990’s, before financial resources were strategically diverted to launch the health initiative. Increasing the funding for promotion has allowed Maine’s Wild Blueberry business to continue the health story and return to targeted advertising and trade show promotion to bring the wild advantages to market.

Other Commission Programs

Wild Blueberry Commissioners understand that many other factors besides research and promotion can affect the business climate for Wild Blueberry growers and processors. The Commission’s executive director works closely with the Legislature on issues of importance to Maine’s farmers and food processors. Within the constraints of resources, the Commission also works with Maine’s

congressional delegation and crop groups across the nation on Federal issues such as research, crop insurance programs, and conservation programs. The Commission also works on policy issues that could affect growers such as the Maine Board of Pesticide Control rules, the Federal Food Quality Protection Act, Atlantic Salmon recovery efforts under the Federal Endangered Species Act, and state water policy.

The Commission supports Wild Blueberry activities around the State at fairs and other events. Fairs and events are supported with materials such as recipe brochures (appendix B), posters (appendix D & E) and other collateral material. Events such as wild blueberry pie baking contests are supported with T-shirts, aprons, and banners on loan. Another successful effort has been the Wild Blueberry placemat program (appendix D). Approximately 175,000 placemats are produced annually and distributed to local restaurants during August, Wild Blueberry month in Maine.

In recent years the Commission has worked to get the blueberry health story in the media state wide to raise the awareness of Maine's Official State Berry and develop a sense of pride with Maine citizens for our special fruit. Press releases on new health findings related to Wild Blueberries developed for nationwide distribution are customized for Maine thereby leveraging the investment.

The Commission also provides educational outreach to Maine's school children through it's Wild Blueberry curriculum (appendix E) and supports educational events such as Maine Environthon. The commitment to education stems from the belief that many students in Maine do not think about or often understand where their food comes from, their relationship to food production and the environment, and how locally produced food fits into our Maine culture. The attached Wild Blueberry curriculum (appendix E) was professionally developed for grades 4-6 and tested in Maine schools prior to final production. The poster was updated at the time of curriculum development as is part of the kit.

The curriculum was provided to all Maine 4th grades. Additionally, hundreds of kits are provided to Maine educators at special field days or upon request annually. Soon after the release to the kit the Commission received many requests from home schoolers. A large effort was made by the Commission to place a copy of the kit presented in a binder to all 279 public libraries across the State of Maine to honor these requests. The Commission worked closely with Maine Agriculture in the Classroom in the development and distribution of the curriculum and appreciates their efforts.

The brochure Maine's Wild Blueberry Lands (appendix B) was produced to provide general information to the public about Maine's unique Wild Blueberry industry. Educators can also request this brochure and health/recipe brochures for their students.

Performance of Programs

The Commission's legislative charge is to **"conserve and promote the prosperity and welfare of this State and of the wild blueberry industry of this State"**. A few relevant measures of the prosperity of the Maine's Wild Blueberry industry are the crop size and price to growers and processors.

Research and Extension

The crop size and trends in crop size are an indication of the effectiveness of the research and extension program. If growers have the information they need to manage their crops and there is a market, crop size will be maintained or will increase.

During the period 1960 through 1980 the crop size averaged about 20 million pounds per year (figure 2) and remained consistent. During the period from the early 1980's through 2000 the average crop size increased from 20 million to over 75 million pounds per year. Recently the 5 year rolling average crop size has leveled off at around 75 million pounds per year (figure 5) due to poor crops in 2004 and 2005 resulting from unfavorable weather. During the mid to late 1990's, the variability in crop size was reduced (figure 6). However, since 2000 there have been large variations in crop size due to mother nature. The record 111 million pound crop in 2000 was a result of near perfect growing conditions in 1999 and 2000. As a result of winter injury, the 2004 crop of 46 million pounds was the smallest since 1991. The 2005 crop is expected to be 15-20% below average due to the cool and damp May which limited pollination and increased disease.

Recent increases in crop sizes indicates that growers are receiving the information they need to improve their management practices. This trend indicates the Wild Blueberry research and extension programs are contributing to the prosperity of the industry.

Promotion

The United States Government has had a long standing policy to encourage the production of safe, cheap food in the United States. In this country we are blessed with a bountiful supply of high quality cheap food. Sadly, this policy has resulted in a difficult business climate for growers, especially when supplies are increasing and/or are temporally large. Increasing crop size and large annual crops often mean low prices to growers.

Wild Blueberry growers and processors have experienced these price cycles related to crop size in the past. Figure 7 shows the Wild Blueberry price paid to growers and processors during the last 15 years. The low price period of 1993 – 1995 was a result of the large 1992 crop (figure 6) and relatively strong crops in the years after. Since Wild Blueberries can be stored in freezers for two years with no

loss in quality, it took a few years for the inventory over supply to be corrected. During the late 1990's crop sizes were relatively stable, demand was increasing and prices (figure 7) were relatively strong. In 2000, Maine had the record 111 million pound crop (figure 6) followed by large crops in Canada 2001-2003 which resulted in a period of low prices (figure 7) in the market. Demand is now extremely strong as the market has responded to the health promotion and relatively smaller crops. We expect the next couple of years to be strong ones in the market providing there are not national or international economic disruptions.

Wild Blueberries compete in the market place with other small fruits with the closest competitor being cultivated blueberries. Figure 8 shows the price of frozen Wild and cultivated blueberries. To a large degree prices have a similar curve. Usually cultivated blueberries are cheaper than wild, however, in the last couple of years cultivated has been higher than wild due to large wild crops and a smaller percentage (less supply) of the cultivated crop being frozen. In recent years most of the growth in the cultivated market has been in the fresh product. Wild is premium product and should be sold at levels above frozen cultivated. As demand increases relative to crop size over the next few years, the wild price should increase.

Some indications of the success of Wild Blueberry promotion programs are pricing trends, the level of prices in a large crop year compared to past years, and the overall revenue to growers over time.

When looking at supply and historical prices the whole industry (Maine and Canada) must be considered. Figure 9 shows the large 200 million pound crops in 2000 and 2003. Also note the large "leap in supply" during the period 1999-2004 with the total Wild Blueberry crop averaging 185 million pounds. For reference the 1992 "record" crop was 136 million pounds with the 1993-1997 crops ranging from 120 to 140 million pounds per year. Even the "small crops" of 2001, 2002 and 2004 were significantly larger than the crops in the "good economic years" of the late 1990's.

While pricing to growers and processors was difficult 2001-2003 (figure 7), when compared to crop size and considering the soft world wide economic conditions during that period it is amazing prices were as strong as they were. Looking at figure 9, the wild blueberry business had the equivalent of an extra crop in the early years of the century. This "leap in supply" was larger percentage wise than the increase in cranberry supply of the late 1990's when prices crashed and the government limited the amount of crop (supply) cranberry growers could harvest and sell. Cranberry prices 1999-2001 were 70% less than strong pricing in 1997 (USDA, National Agricultural Statistics Service). By comparison, Wild Blueberry prices to growers 2000-2003 were 32% less than the good years in the late 1990's. The creation of demand through promotion of the health story helped to prevent the market from going lower in a period of uncertain economic conditions (9/11) and huge crops.

Figure 10 illustrates that gross revenue to growers is a function of both price and crop size. Price can be influenced through promotion (perceived value by customers) but often crop size (supply) has a big influence on price. Gross revenue to the grower is their crop size times price. In 1992, gross revenues were high due to a large crop but revenues suffered 1993-1995 while the large inventory worked out. In the late 1990's demand increased but supply was constant in Maine (figure 6) and trending upward across Maine and Canada (figure 9). Gross revenues were fairly consistent mostly during this period of increasing industry supply indicating the market demand was increasing and absorbing the supply without a price decrease. Revenues spiked again in 2000 due to a new record crop. Large crops across the industry 2000-2003 resulted in lower prices and lower gross revenues to growers and processors. Demand has strengthen again in the last couple of years. 2004 and 2005 could have been good years for Maine if we had average or slightly above average crops, however, in 2004 Maine lost 40%-45% of the crop due to winter injury and 2005 is expected to be 15%-20% below average statewide with many small growers reporting disastrous crops. This illustrates that while we can seed the market and create demand through promotion, crop supply is largely controlled by mother nature and greatly affects revenue.

Market place price indicators when viewed in comparison to crop size indicate that efforts to promote Wild Blueberries in the market place are benefiting Maine's Wild Blueberry growers and processors. Demand is currently high. If Maine has some good crops in the next few years with fairly stable global economies, our growers and processors should have a few good years economically.

III. EMERGING ISSUES

State Water Policy

Involvement in state water policy is not a new issue as the Commission and many other agricultural groups have been involved in this issue for well over ten years. However, currently there is a high level of interest in the state to change the regulatory approach to water use, in some cases changing the ownership of water without compensation, and taxing the use of water from private water sources developed under existing law. It is anticipated that over the next few years significant effort will need to be expended on this issue as water is important to both growers and processors.

Future Staffing for Key Programs

The Commission has become involved in many public policy issues at the state and federal level on behalf of Maine's Wild Blueberry businesses. Most of these issues such as Federal agricultural policy, implementation of the Food Quality Protection Act, and recovery of Atlantic salmon under the Federal endangered species act are never completely resolved. If the Commission is to stay engaged in all issues, the allocation of human resources will need to be addressed or certain issues addressed at a different level.

Other Regulations

While not a new issue, the cumulative effect of Federal and State regulations on small businesses continues to be a real issue. It is an issue that is both difficult to measure and stem because it is truly cumulative. The effect is not felt until a farmer decides to leave the business. Ironically, both at the state and federal level we as society have been asking what can be done to save small farms and foster small businesses and then we turn around and burden them with more rules and regulations.

IV. ADMINISTRATIVE EFFICIENCIES AND OUTREACH

Coordination with Other Agencies and Organization

The Wild Blueberry Commission of Maine works hard to reach out to other agencies and organizations because as one small agricultural interest we cannot solve our problems by ourselves. We look for every opportunity to work with the Maine Department of Agriculture Food and Rural Resources. The Commission is a member of Maine Farm Bureau and the Commission's executive director is currently on the board of directors of the Agricultural Council of Maine and is a past president. Through these two organizations, the Commission works to coordinate its activities with other agricultural organizations.

Directly and through the Wild Blueberry Advisory Committee, the Commission works with and supports the University of Maine research and extension capabilities. The Commission and industry members are active participants on University of Maine System Board of Agriculture. The Commission's Executive Director recently served 2 years as vice chair and 2 years as chair of the Board of Agriculture.

Alternative Delivery Systems

The Wild Blueberry Commission of Maine with the support of the Legislature adopted an alternative delivery system when it became a public instrumentality of the State on July 1, 1997. Being an instrumentality allows the Commission to move faster on behalf of Maine's Wild Blueberry growers and processors.

For over 20 years the Commission has accomplished Wild Blueberry promotion through the Wild Blueberry Association of North America. In recent years the Commission has partnered with Maine Agricultural in the Classroom to assist in its education out reach efforts. The Commission has a tradition of looking for ways to accomplish objectives through "alternative delivery systems" and working with other entities.

Regulations

Currently, the Wild Blueberry Commission does not have regulatory rules. However, it does issue Wild Blueberry transport permits to assist the growers in reducing field theft.

Compliance With Health and Safety Laws

The Commission strives to comply with all health and safety laws.

Collection of Personal Information

The only personal information the Commission collects on a regular basis is information provided on the "Maine Wild Blueberry Transport Permit" form. Personal information generated includes landowner name, address, phone number, permit holder's name, drivers license number, state of license issue, vehicle license plate number and state or province, and the location and phone number of the entity receiving the wild blueberries. This information is collected on paper forms. All this information is kept confidential as per Title 36, Chapter 701, section 4315 unless it is need to enforce the provisions of Title 36, Chapter 701, section 4314 or in prosecution of any other criminal law.

Figure 1

**WILD BLUEBERRY COMMISSION OF MAINE
Organizational Chart**

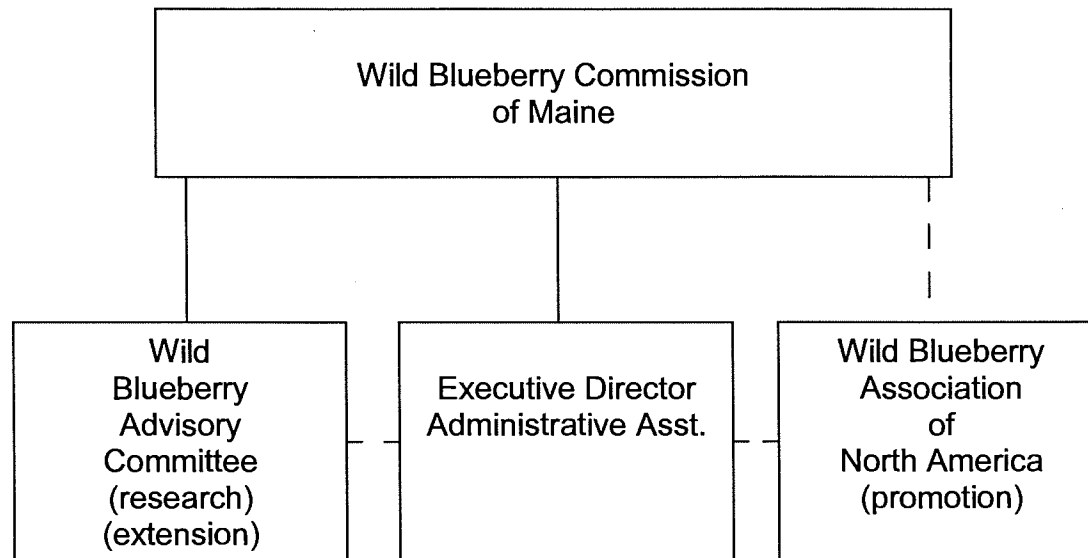
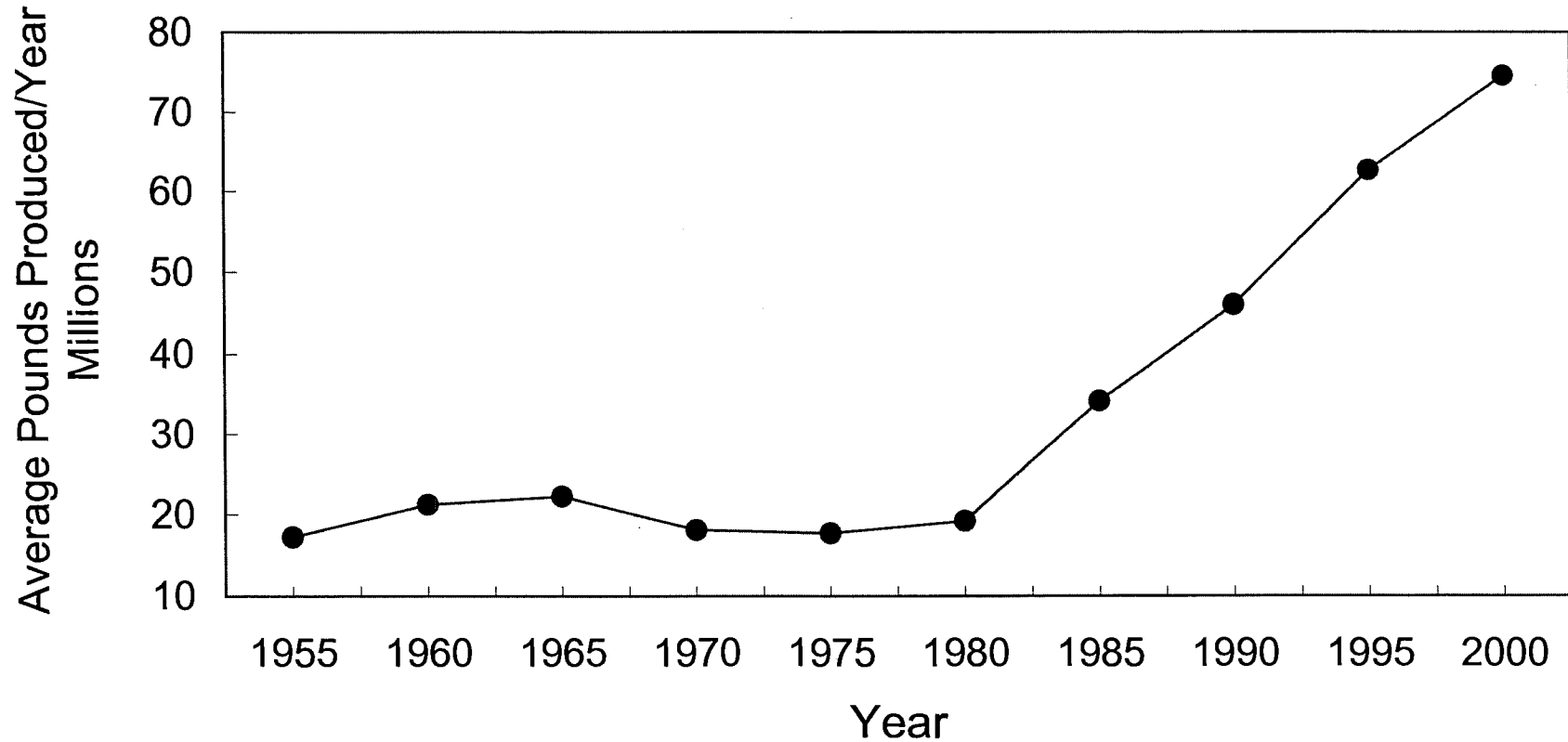


Figure 2

Maine Wild Blueberry Production

5 Year Average*



*The figure for each year is the average yield for the five years up to and including the given year



Figure 3

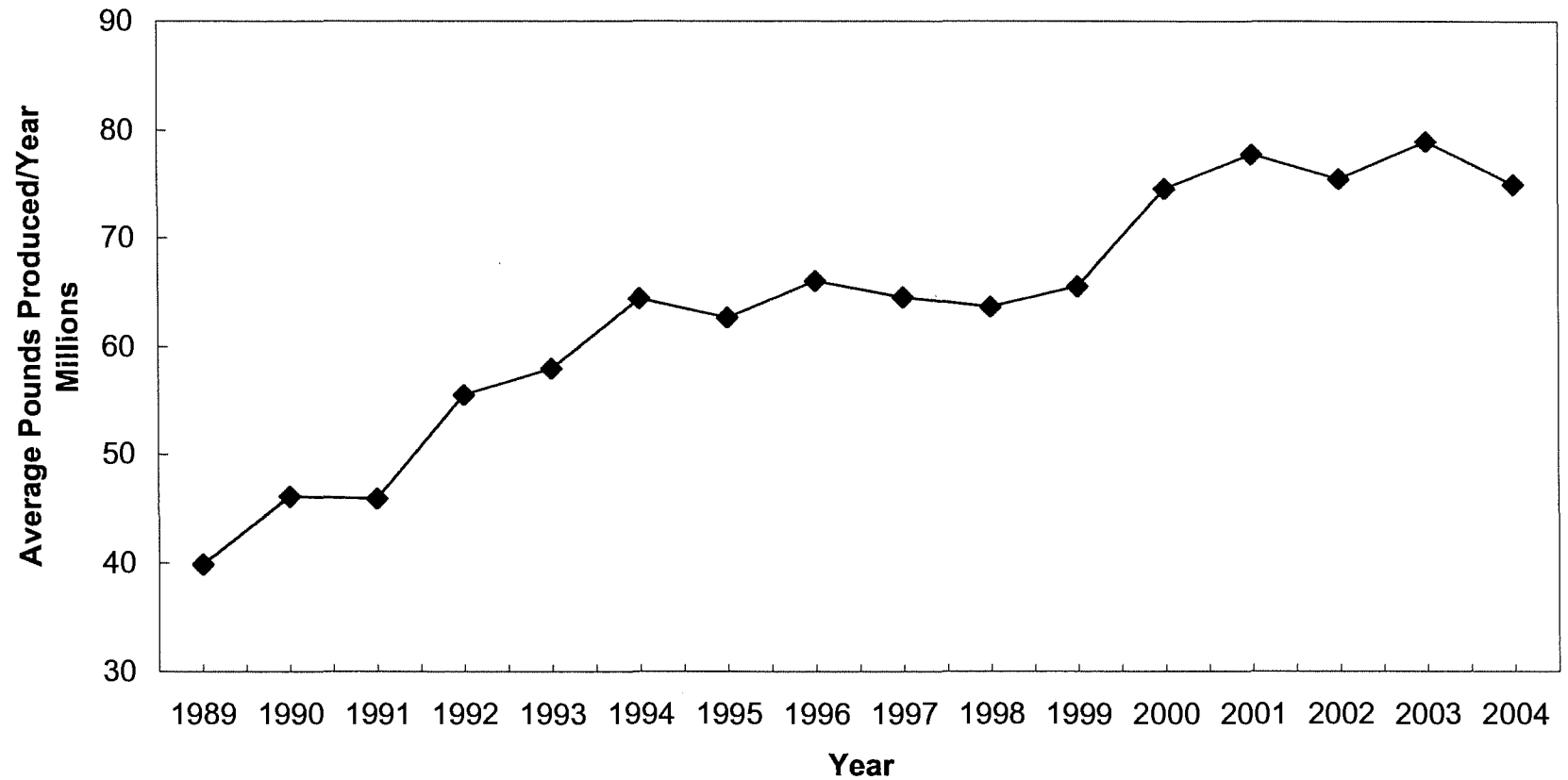


Figure 4

Figure 5

Maine Wild Blueberry Production

5 Year Rolling Average*



*The figure given for each year indicates the average yield for the five years up to and including the given year

Figure 6

Maine Wild Blueberry Annual Production

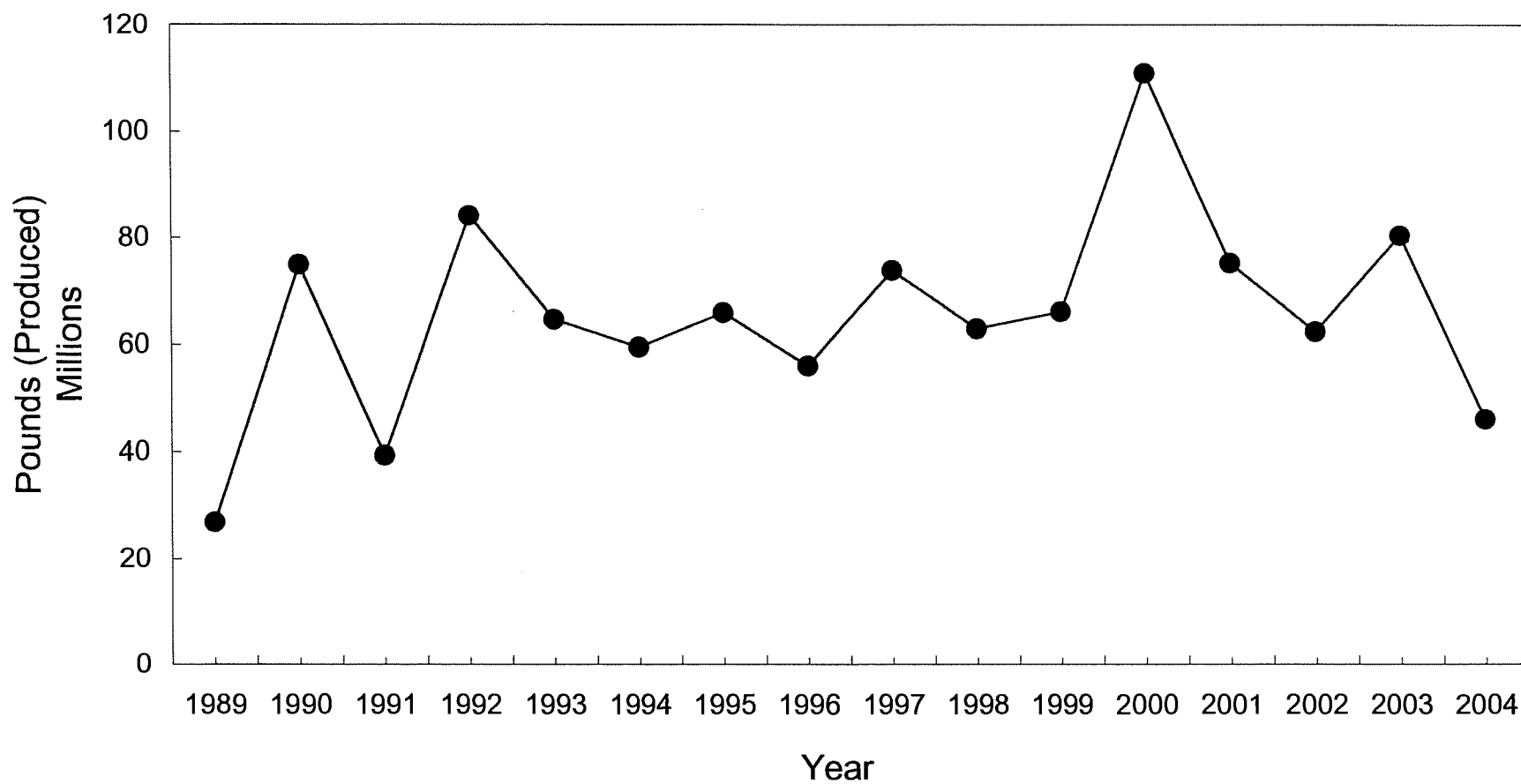
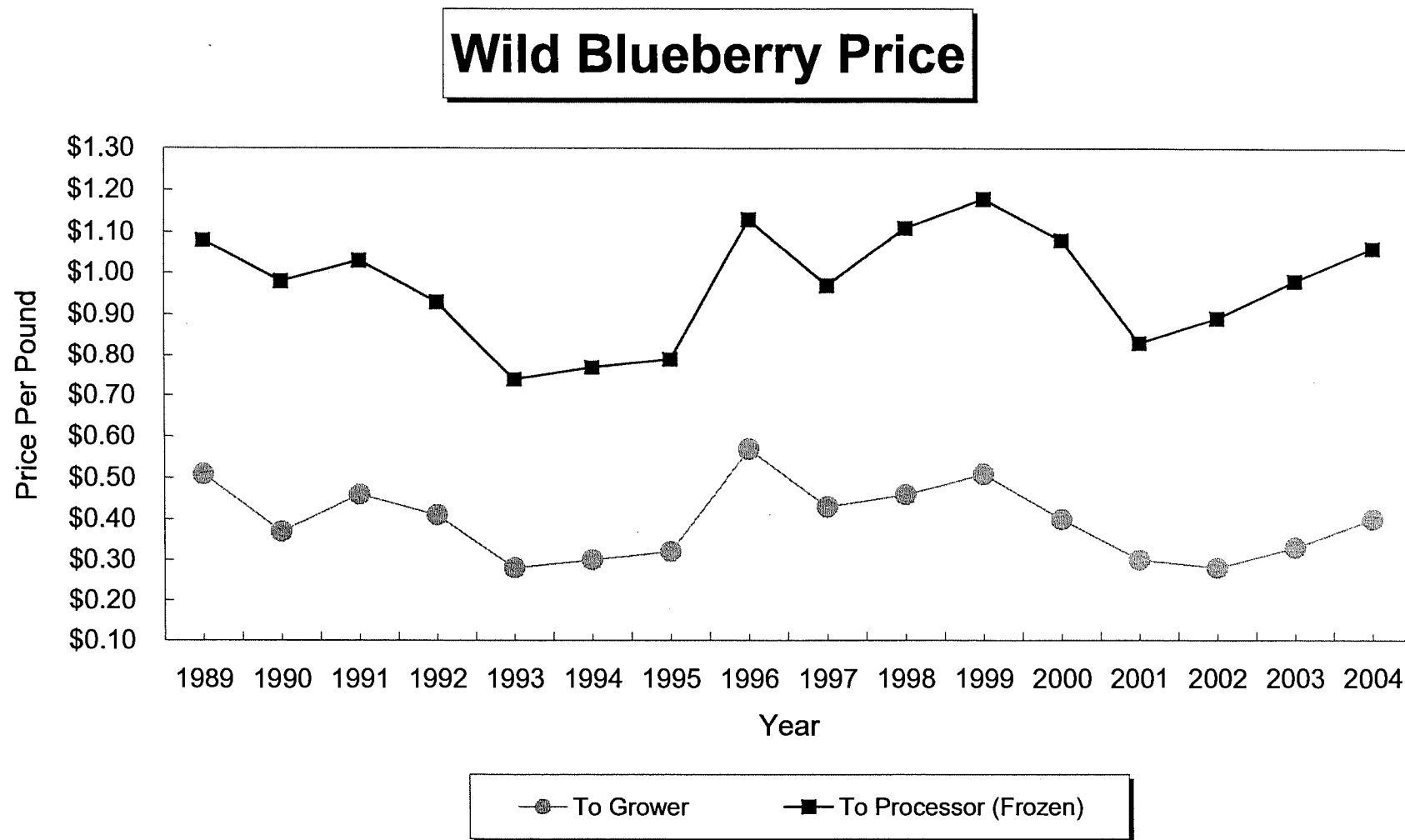


Figure 7



1 U.S.D.A. National Agricultural Statistics Service
2 Food Institute Report - market price Aug.-Sept.
3 Projected Price

Figure 8

Frozen Blueberry Price To Processor

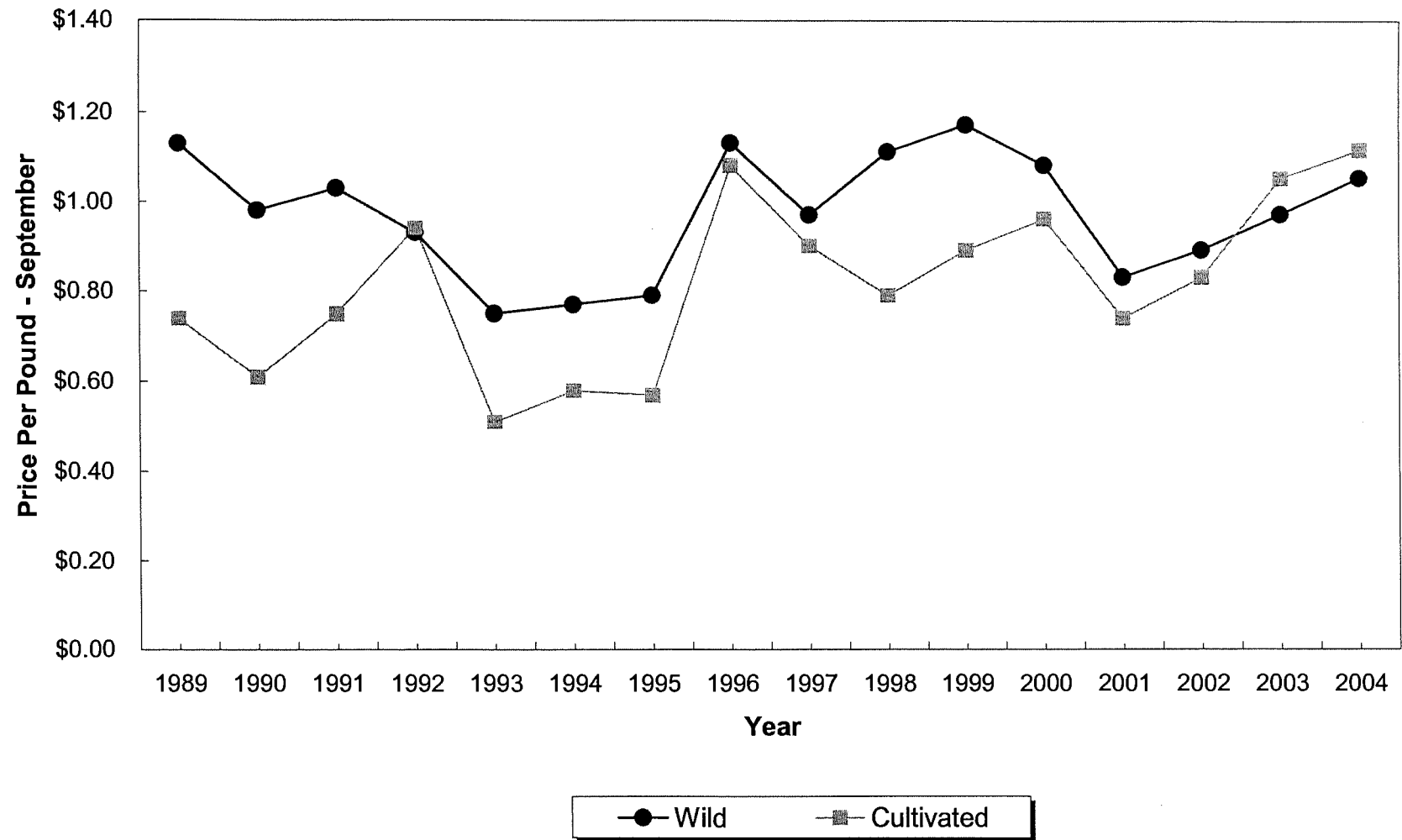


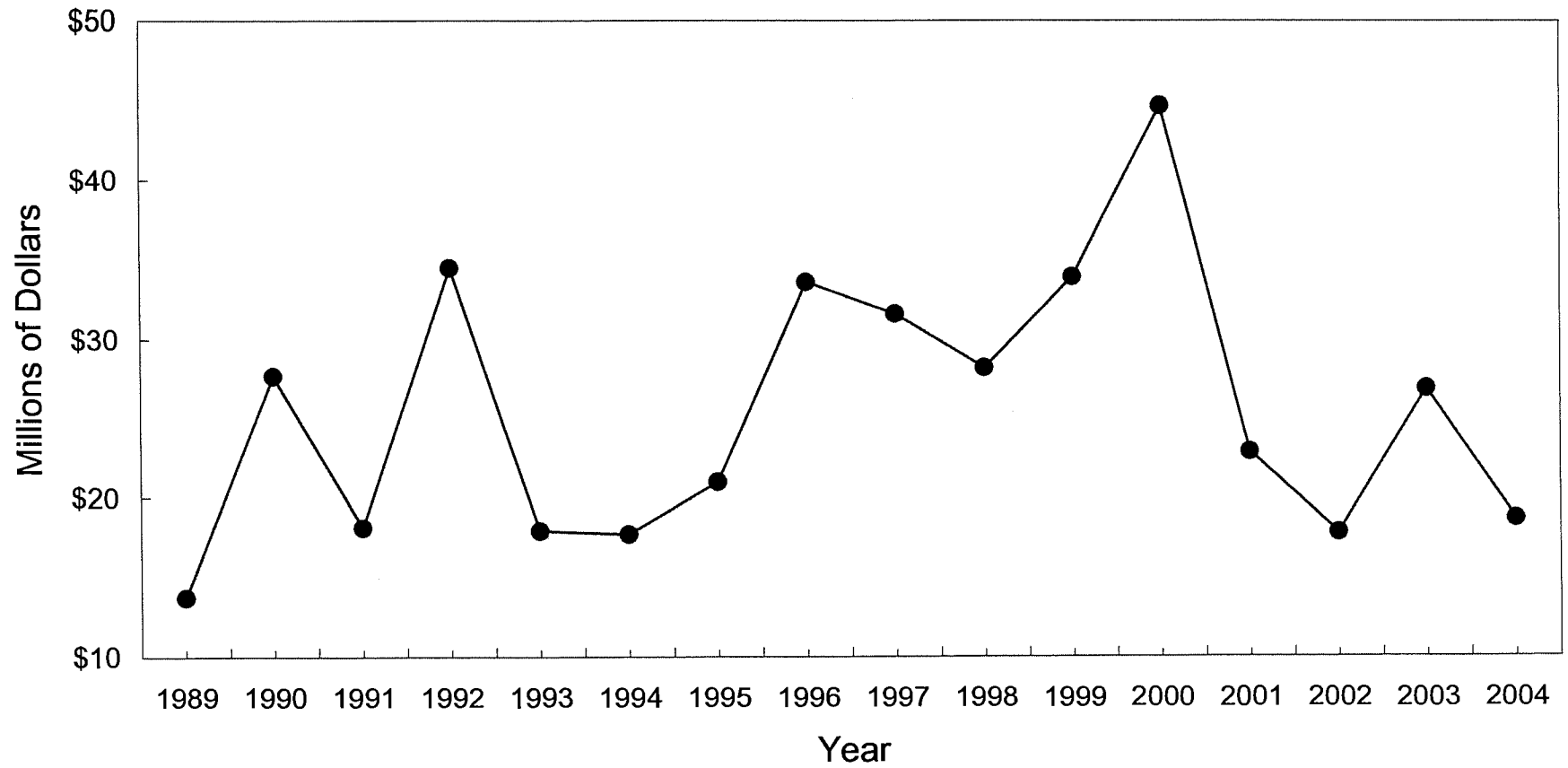
Figure 9

Commercial Wild Blueberry Crop Size (Maine and Canada)



Figure 10

Millions Dollars to Maine Wild Blueberry Growers



1 U.S.D.A. National Agricultural Statistics Service

2 Projected

Title 36, Chapter 701, BLUEBERRY TAX

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Chapter 701: BLUEBERRY TAX

§4301. Purpose

The production and marketing of wild blueberries is one of the most important agricultural industries of the State, and this chapter is enacted into law to conserve and promote the prosperity and welfare of this State and of the wild blueberry industry of this State by fostering research and extension programs, by supporting the development of promotional opportunities and other activities related to the wild blueberry industry. [1997, c. 511, §3 (amd).]

§4302. Definitions

The terms used in this chapter shall be construed as follows:

1. Blueberries. [1997, c. 511, §4 (rp).]

1-A. Grower. "Grower" means a person, firm, partnership, association or corporation engaged in the growing of wild blueberries and that is not a "processor" as defined in subsection 2. [1997, c. 511, §5 (amd).]

1-B. Crew leader. "Crew leader" means a person designated by an owner to supervise an organized crew. [1989, c. 214, §1 (new).]

1-C. Organized crew. "Organized crew" means a group of people working together under the supervision of a crew leader to harvest, pick, rake, possess or remove wild blueberries from the land of an owner. [1997, c. 511, §6 (amd).]

1-D. Owner. "Owner" includes a landowner or leaseholder of land on which wild blueberries are grown and harvested for profit, or the landowner's or leaseholder's authorized agent, and includes a receiver of wild blueberries grown in Canada and purchased from Canadian sellers. [1997, c. 511, §6 (amd).]

1-E. Permanent record. "Permanent record" means a written record which is kept and maintained for not less than 6 years. [1989, c. 214, §1 (new).]

2. Processor. "Processor" means a person, firm, partnership, association or corporation engaged in the fresh packing, canning, freezing or dehydrating of wild blueberries whether as owner, agent or otherwise. [1997, c. 511, §7 (amd).]

3. Seller. "Seller" means a person, firm, partnership, association or corporation offering fresh wild blueberries for sale, either to themselves or to others. [1997, c. 511, §8 (amd).]

4. Shipper. "Shipper" means a person, firm, partnership, association or corporation engaged in the shipping, transporting, storing, selling or otherwise handling of wild blueberries either in processed form or as fresh fruit, whether as owner, agent or otherwise. [1997, c. 511, §8 (amd).]

5. Transportation permit. "Transportation permit" means an official permit on forms duly adopted and furnished by the Wild Blueberry Commission of Maine to owners. [1997, c. 511, §9 (amd).]

6. Wild blueberries. "Wild blueberries" means all lowbush blueberries grown, purchased, sold or handled for commercial purposes in this State. [1997, c. 511, §10 (new).]

§4303. Rate of tax

There is levied and imposed a tax at the rate of 3/4¢ per pound of fresh fruit on all fresh wild blueberries grown, purchased, sold, handled or processed in this State. The tax is computed on a fresh fruit basis, regardless of how the wild blueberries are processed. [2001, c. 147, §1 (amd).]

§4303-A. Additional tax

There is levied and imposed an additional tax at the rate of 3/4¢ per pound of fresh fruit on all fresh wild blueberries grown,

Title 36, Chapter 701, BLUEBERRY TAX

purchased, sold, handled or processed in this State. The tax is computed on a fresh fruit basis, regardless of how the berries are processed, and may not be deducted from the purchase price or collected from the seller under section 4306. [2001, c. 147, §2 (amd).]

§4304. Due date

The tax imposed by section 4303 and the additional tax imposed by section 4303-A are due upon any particular lot or quantity of wild blueberries under section 4307. [1997, c. 511, §13 (amd).]

§4305. Certification

Every processor or shipper of wild blueberries shall obtain certification from the State Tax Assessor before processing or shipping wild blueberries. The assessor shall provide the applications for the certification, which must contain the name under which the processor or shipper is transacting business in the State, the place or places of business, the names and addresses of the persons constituting a firm or partnership and, if a corporation, the corporate name and names and addresses of its principal officers and agents in the State. A processor or shipper may not process or ship wild blueberries until the certification has been issued. Certification may be suspended or revoked by the assessor for failure to pay the tax imposed by section 4303 or for the filing of false or fraudulent reports or returns. A certificate issued by the assessor pursuant to this section is not a license within the meaning of that term in the Maine Administrative Procedure Act. [2003, c. 705, §5 (amd).]

§4306. Tax deducted from purchase price

Each processor or shipper purchasing wild blueberries and paying or becoming liable to pay the tax imposed by section 4303 shall charge and collect from the seller a tax at the rate of 3/4¢ per pound, to be deducted from the purchase price of all wild blueberries subject to the tax purchased by the processor or shipper. [2001, c. 147, §3 (amd).]

§4307. Records and reports; payment of tax

Every processor or shipper shall, on or before November 1st of each year, report to the State Tax Assessor the quantity of wild blueberries grown, purchased or sold by that processor or shipper during the current season, on forms furnished by the State Tax Assessor. The report must contain the information pertinent to the purchase or sale as the State Tax Assessor prescribes. With the report, each processor or shipper shall forward payment of the tax at the rate of 1 1/2¢ per pound upon all wild blueberries reported as grown, sold or purchased. [2001, c. 147, §4 (amd).]

§4308. Inspection

The State Tax Assessor or the assessor's duly authorized agents have authority to enter any place of business of any processor or shipper or any car, boat, truck or other conveyance in which wild blueberries are to be transported and to inspect any books or records of any processor or shipper, or any premises where wild blueberries are stored, handled, transported or merchandised, for the purpose of determining what wild blueberries are taxable under this chapter or for the purpose of determining the truth or falsity of any statement or return made by any processor or shipper, and the State Tax Assessor may delegate that power to the Commissioner of Agriculture, Food and Rural Resources, or the commissioner's deputies, agents or employees. [1997, c. 511, §17 (amd).]

§4309. Records available on limited basis (REPEALED)

§4310. False returns; violations; civil action for collection (REPEALED)

§4311. Appropriation of moneys received (REPEALED)

§4311-A. Appropriations of money received

Money received from the tax levied by sections 4303 and 4303-A must be appropriated for the following purposes: [1997, c. 511, §18 (amd).]

1. Collection and enforcement. The commission shall pay a sum to the State Tax Assessor representing the cost incurred by the State in collection of the taxes imposed by this chapter and the enforcement of this chapter; [1997, c. 511, §18 (amd).]

1-A. Transfer, allocation and appropriation. Money received by the Treasurer of State under this chapter, including all receipts of taxes levied under sections 4303 and 4303-A, must be transferred to the Wild Blueberry Commission of Maine in its capacity as an independent agency on a monthly basis by the 15th of the month following collection and be used for all activities of the commission authorized under this chapter. All money received by the Treasurer of State under this chapter, including all receipts of taxes levied under sections 4303 and 4303-A, must be allocated or appropriated to the commission by the Legislature. Money received by the commission

Title 36, Chapter 701, BLUEBERRY TAX

does not lapse and may be invested until expended for activities authorized under this chapter; [1997, c. 511, §18 (new).]

2. Promotion and advertising. The Wild Blueberry Commission of Maine may implement programs and activities to promote and advertise wild blueberries; and join with any local, state, federal or private agency, department, firm, corporation or association to implement the purposes of this section; [1997, c. 511, §18 (amd).]

3. Research and extension educational programs. Thirty percent of the funds collected, but not to exceed \$85,000, must be dedicated to the University of Maine System for the purpose of supplementing its research and extension programs related to improved methods of growing, harvesting, processing, product development and marketing of wild blueberries. The Wild Blueberry Commission of Maine may allocate additional funds to the University of Maine System or other organizations for research and extension programs as may be appropriate to implement the purposes of this section; [1997, c. 511, §18 (amd).]

4. Administration and other activities. The commission may allocate funds necessary for the administration of this chapter and for other activities related to the economic viability of the Maine wild blueberry industry; and [1997, c. 511, §18 (amd).]

5. Balance of funds. Any funds remaining over and above the expenses incurred under subsection 3 do not lapse, but must be carried forward to the same fund and for the same purposes for the next fiscal year. [1997, c. 511, §18 (amd).]

§4312. Advisory committee

The University of Maine System Wild Blueberry Advisory Committee, as authorized by Title 5, chapter 379, is appointed by the Wild Blueberry Commission of Maine. The committee consists of 7 members who are active in and representative of the wild blueberry industry. The duty of the committee is to advise and work with the University of Maine System to develop and approve a plan of work and budgets for research and extension programs related to the production and use of wild blueberries. [1997, c. 511, §19 (amd).]

Current members of the advisory committee shall continue to serve for the duration of their current appointments. New appointments to the advisory committee shall be for terms of 4 years and no appointee may be eligible for reappointment until the lapse of one year from the expiration of a previous appointment. [1983, c. 836, § 9 (new).]

§4312-A. Appropriation of moneys received (REPEALED)

§4312-B. Maine Blueberry Commission (REPEALED)

§4312-C. Wild Blueberry Commission of Maine

1. Commission established as a public instrumentality. The Wild Blueberry Commission of Maine, as established by Title 5, section 12004-H, subsection 13-A and referred to in this section as the "commission," is established as a public body corporate and politic and an incorporated public instrumentality of the State. The exercise of powers conferred by this chapter is held to be the performance of essential government functions.

A. Employees of the commission may not be construed to be state employees for any purpose, including the state civil service provisions of Title 5, Part 2 and Title 5, chapter 372.

[1997, c. 511, §21 (new); §25 (aff).]

B. The commission may not be construed to be a state agency for any purpose, including the budget, accounts and control, auditing, purchasing or other provisions of Title 5, Part 4.

[1997, c. 511, §21 (new); §25 (aff).]

C. Notwithstanding paragraphs A and B:

(1) Employees of the commission may be state employees for the purposes of the state retirement provisions of Title 5, Part 20 and the state employee health insurance program under Title 5, chapter 13, subchapter II;

(2) For the purposes of the Maine Tort Claims Act, the commission is a governmental entity and its employees and members are employees as those terms are defined in Title 14, section 8102;

(3) Funds received by the commission pursuant to this chapter must be allocated to the commission by the Legislature in accordance with Title 5, section 1673; and

(4) All meetings and records of the commission are subject to the provisions of Title 1, chapter 13, subchapter I, except that by majority vote of those members present, records and meetings of the commission may be closed to the public when public disclosure of the subject matter of the records or meetings would adversely affect the competitive position of the wild blueberry industry of the State or segments of that industry. The Commissioner of Agriculture, Food and Rural Resources and those members of the Legislature appointed to serve on

Title 36, Chapter 701, BLUEBERRY TAX

the joint standing committee of the Legislature having jurisdiction over agricultural, conservation and forestry matters have access to all material designated confidential by the commission.

[1997, c. 511, §21 (new); §25 (aff).] [1997, c. 511, §21 (new); §25 (aff).]

2. Appointment. Appointments to the commission are made by the Commissioner of Agriculture, Food and Rural Resources. [1997, c. 511, §21 (new); §25 (aff).]

3. Membership. The commission consists of 8 members who are active in and representative of the wild blueberry industry, appointed by the Commissioner of Agriculture, Food and Rural Resources. Three members must be grower representatives. For the purposes of this section, "grower" means a person, firm, partnership, association or corporation engaged in the growing of wild blueberries and processing less than 1,000,000 pounds of wild blueberries in a calendar year. Five members must be processor representatives who process 1,000,000 pounds or more of wild blueberries in a calendar year. [1997, c. 511, §21 (new); §25 (aff).]

4. Term. Members serve 4-year terms. [1997, c. 511, §21 (new); §25 (aff).]

5. Organization. Members of the commission shall elect annually by majority vote one member of the commission to serve as chair and one member to serve as vice-chair. The commission may appoint by majority vote an executive director who is the commission's chief administrator and such personnel as the commission considers necessary to administer policies and programs established by the commission. The executive director and other staff serve at the pleasure of the commission. The salaries paid to the executive director and other staff of the commission are fixed by the commission. The executive director and other staff are not subject to the personnel laws of the State. [1997, c. 511, §21 (new); §25 (aff).]

6. Compensation of commissioners. Members of the commission are entitled to compensation in accordance with Title 5, chapter 379. [1997, c. 511, §21 (new); §25 (aff).]

7. Function of commission. It is the responsibility of the commission to utilize and allocate such funds as may be available from the funds collected under section 4307. The commission may make contracts or enter into contracts with any local, state, federal or private agency, department, firm, corporation or association as may be necessary to carry out the purposes of this chapter. [1997, c. 511, §21 (new); §25 (aff).]

8. Debt. A debt or obligation incurred by the commission is not a debt or obligation of the State. [1997, c. 511, §21 (new); §25 (aff).]

9. Books and records. The commission shall keep books, records and accounts of all its activities, which must be open to inspection and audit by the State at all times. An independent certified public accountant shall conduct an annual audit of the financial records of the commission and report the results of the audit to the commission, the Commissioner of Agriculture, Food and Rural Resources, the Treasurer of State and the Legislature. [1997, c. 511, §21 (new); §25 (aff).]

10. Funding. The commission may receive and expend funds from any source, public or private, that it determines necessary to carry out its purposes. [1997, c. 511, §21 (new); §25 (aff).]

11. Appropriation and use of money received. The commission may accept grants or contributions of money or other things of value from any source, public or private. Those grants or other contributions must be held by the commission and used to carry out the purposes of this chapter, subject to any condition under which the grant or contribution was accepted by the commission. [1997, c. 511, §21 (new); §25 (aff).]

12. Bylaws. The commission may adopt bylaws to govern its functions. [1997, c. 511, §21 (new); §25 (aff).]

§4313. Tax as additional (REPEALED)

§4314. Permit required

1. Possession or removal unlawful. It is unlawful for a person to harvest, pick, rake, possess or remove wild blueberries from the land of an owner without first securing written permission from the owner or the owner's authorized agent. This section does not apply to members of an organized crew, if the crew leader has first secured the written permission of the owner. A person authorized to make inspections under this chapter may require a person on the land of an owner who has possession of wild blueberries or is found harvesting, raking, picking or removing wild blueberries to show a current written permit. [1997, c. 511, §22 (amd).]

2. No effect on other laws. Nothing in this section may be construed: [1989, c. 214, §2 (new).]

A. To relieve any person of any obligation to obtain permission to enter upon the land or premises of another; or

[1989, c. 214, §2 (new).]

B. To affect any criminal or civil liability which may exist for unauthorized entry, trespass, theft or conversion.

Title 36, Chapter 701, BLUEBERRY TAX

[1989, c. 214, §2 (new).]

3. **Violation.** Any violation of this section is a Class E crime. [1989, c. 214, §2 (new).]

§4315. Transportation of wild blueberries

1. **Transportation of wild blueberries without permit.** A person may not transport wild blueberries in quantities exceeding 25 pounds without first obtaining a transportation permit on an official form to be furnished by the Wild Blueberry Commission of Maine. The Wild Blueberry Commission of Maine shall issue upon request official transportation permit forms to shippers and processors certified under section 4305. Shippers and processors may issue the transportation permits to owners or owner's transportation agents with written authorization from owners. Each permit issued must bear a different number and expire at the end of the calendar year. This subsection does not apply to wild blueberries that have been received by a certified shipper or processor and have been weighed, logged into a permanent record-keeping system and reloaded onto a vehicle for shipping under a bill of lading. [2003, c. 452, Pt. U, §6 (amd); Pt. X, §2 (aff).]

1-A. **Records of permits; confidentiality.** When a shipper or processor issues a transportation permit, the shipper or processor shall immediately send a copy to the Wild Blueberry Commission of Maine. The commission shall keep a permanent record of all transportation permits issued. The commission shall establish the form and content of transportation permits and establish the record-keeping requirements of the commission, shippers and processors. Notwithstanding any provision of Title 1, chapter 13, subchapter 1 to the contrary, records pertaining to transportation permits required to be kept by the Wild Blueberry Commission of Maine under this section are confidential to the extent necessary to preserve the identity of parties to individual business transactions. The confidential status does not apply when records kept by the Wild Blueberry Commission of Maine are needed as evidence in a proceeding to enforce a provision of section 4314 or this section or in a prosecution for a violation of any other criminal law. [2003, c. 452, Pt. U, §7 (new); Pt. X, §2 (aff).]

2. **Permits subject to forgery laws.** Every permit specified under this section is deemed to be a written instrument subject to the laws of forgery. [1989, c. 214, §2 (new).]

3. **Violation.** The following penalties apply to violations of this section. [2003, c. 452, Pt. U, §8 (rpr); Pt. X, §2 (aff).]

A. A person who transports wild blueberries in violation of this section commits a Class E crime. Violation of this paragraph is a strict liability crime as defined in Title 17-A, section 34, subsection 4-A.

[2003, c. 452, Pt. U, §8 (new); Pt. X, §2 (aff).]

B. A person who violates any other provision of this section commits a civil violation for which a fine of not more than \$500 may be adjudged.

[2003, c. 452, Pt. U, §8 (new); Pt. X, §2 (aff).]

4. **Exceptions.** A person is not guilty of transporting wild blueberries without a transportation permit if: [1997, c. 511, §23 (amd).]

A. The person is transporting wild blueberries that were not harvested in this State; or

[1997, c. 511, §23 (amd).]

B. That person purchased the wild blueberries at a store, farm stand, produce market or other retail outlet.

[1997, c. 511, §23 (amd).]

§4316. Receivers of wild blueberries

1. **Record keeping required.** A person who receives wild blueberries shall keep a permanent record of each lot or load of wild blueberries received. The record must include the name of the driver of the vehicle used to deliver the wild blueberries, the date of delivery, the delivery point, the number of the transportation permit, the driver's license number and the total pounds of wild blueberries delivered. [1997, c. 511, §24 (amd).]

2. **Inspection of permit required.** It is unlawful for a person to receive or accept delivery of wild blueberries in lots of greater than 5 pounds without first inspecting the transportation permit of the driver of the vehicle used to deliver the wild blueberries and recording the transportation permit number in accordance with subsection 1. [1997, c. 511, §24 (amd).]

3. **Violation.** The failure to keep the permanent records of wild blueberries received as required in this section, failure to inspect the transportation permit of a driver of a vehicle used to deliver wild blueberries or any other violation of this section is a civil violation punishable by a fine of not more than \$1,000. [1997, c. 511, §24 (amd).]

4. **Audits.** The Wild Blueberry Commission of Maine may request the Department of Agriculture, Food and Rural Resources to conduct audits of the records of receivers for the purpose of ascertaining compliance with this section. The commissioner, or a duly

Title 36, Chapter 701, BLUEBERRY TAX

authorized agent, has free access, during normal business hours, to all records required to be kept by receivers pursuant to this section and also to receivers' accounts payable, accounts receivable, records of inventories, actual inventories, records of shipments and such other business records as are needed to ascertain compliance with this section. Any documents inspected or taken by the department in furtherance of the audit functions or any other information collected by the department pursuant to the audit must be kept confidential notwithstanding any provision to the contrary contained in Title 1, chapter 13, subchapter I. This confidential status does not apply to any documents, records or information that is needed as evidence in any civil or criminal proceeding to enforce any law under this chapter or any other criminal law. [1997, c. 511, §24 (amd).]

§4317. Authorized law enforcement

State police, county sheriffs and their deputies, municipal enforcement officers, state forest rangers and game wardens are authorized to make inspections, conduct investigations, make arrests and otherwise enforce this chapter. [1989, c. 214, §2 (new).]

§4318. Sunset provision (REPEALED)



THE *New* HEALTH ADVANTAGE

NATURE'S #1 ANTIOXIDANT FRUIT™



Wild Blueberries



THE INGREDIENT

THE NEW HEALTH ADVANTAGE

Whether we're talking restaurant fare or packaged goods, bakery or beverage, one word describes today's hottest food trend: health. Consumers are choosing good-for-you foods that are great tasting and offer potential health benefits. Wild Blueberries are the ingredient that delivers both. Isn't it time to give your products a healthy advantage?

THINK BLUE, THINK HEALTHY

Satisfying your customers' demands for healthful products is easy: think Wild Blueberries. It turns out everybody's favorite little berry is also gaining fame as the most potent antioxidant fruit. In recent years, blueberries have turned up on numerous top-ten lists of superfoods, from *TIME*, *Health*, *Woman's Day* and *Cooking Light*, to *Oprah*, *CBS News* and the *Today Show*.



THAT SAYS *Healthy.*

As one food writer put it, Wild Blueberries are today's "it" health food. In fact, Wild Blueberries are packed with powerful, "blue" phytonutrients that promise a wide range of potential health benefits, from protecting against cancer and heart disease to keeping the brain sharp.

THE INGREDIENT OF CHOICE

Around the world, more Wild Blueberries are used as ingredients than any other blueberries on earth.

It's no surprise, considering their natural advantages: a distinctive, tangy-sweet flavor, a smaller size that delivers more berries per pound, superior performance —

in any form — and marketing appeal, thanks to their "wild mystique." Plus the fact that Wild Blueberries are antioxidant superstars, giving you all the ingredients for a healthy product success story.

JUST ADD WILD

Add great taste and a health halo to your products simply by using today's most exciting fruit ingredient: Wild Blueberries, the ingredient that says "healthy."

THE *Buzz* ABOUT WILD BLUEBERRIES

Consumer interest in Wild Blueberries has increased dramatically in recent years, thanks to the steady flow of good news surrounding this anti-aging superstar. Scientists, nutritionists and food editors alike are keeping the spotlight on blueberries and their potential health-promoting properties, dubbing them everything from "superfoods" to "brain berries," "power foods" to "miracle berries." No wonder everyone is buzzing about Wild Blueberries!



Nature's #1 ANT



"WILD BLUEBERRIES ARE STARS IN TERMS OF THEIR ANTIOXIDANT CAPACITY."

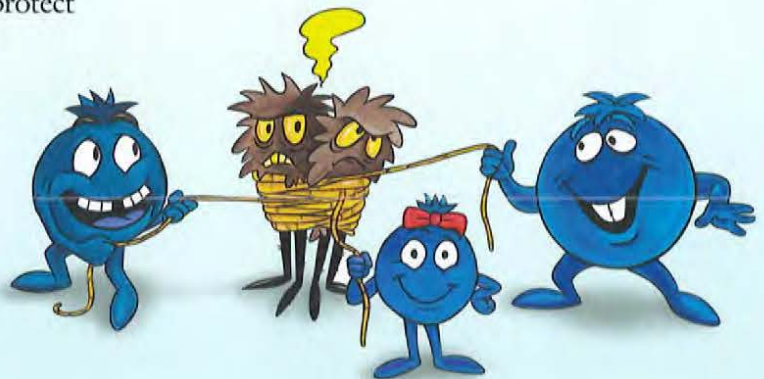
— DR. RONALD PRIOR, LEAD RESEARCHER AT THE USDA ARKANSAS CHILDREN'S NUTRITION CENTER AND AGRICULTURAL RESEARCH SERVICE

WILD BLUEBERRIES ARE #1 IN ANTIOXIDANTS

Recent USDA studies show that Wild Blueberries deliver a potent antioxidant punch — in fact, they have the highest antioxidant capacity per serving, compared with more than 20 other fruits.¹ Using a lab testing procedure called Oxygen Radical Absorbance Capacity (ORAC), USDA researcher Ronald Prior, Ph.D., found that a serving of Wild Blueberries had more total antioxidant capacity (TAC) than a serving of cranberries, strawberries, plums, raspberries and even cultivated blueberries. Simply put, this makes Wild Blueberries powerful allies in the quest for good health.

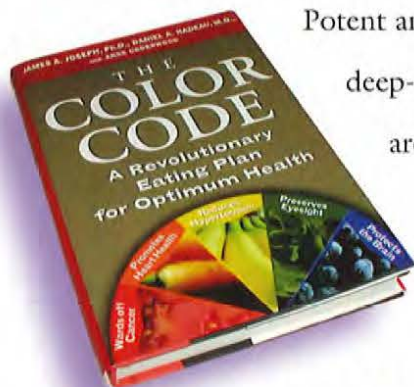
ANTIOXIDANTS FIGHT AGING, CANCER AND HEART DISEASE

Here's why antioxidants are such a hot topic today: they help our bodies protect against disease and age-related health risks. Every day, our cells wage a battle against free radicals — unstable oxygen molecules associated with cancer, heart disease and the effects of aging. Antioxidants come to the rescue. These phytonutrients, natural substances found in fruits and vegetables, neutralize free radicals and help prevent cell damage. Antioxidants also protect against inflammation, thought to be a leading factor in brain aging, Alzheimer's disease, and other diseases of aging.



ANTIOXIDANT FRUIT.™

HEALTHY AGING: THE POWER OF BLUE



DEEP-BLUE BLUEBERRIES MAY BE "ONE OF THE BEST AGE-PROOFING FOODS IN YOUR DIET," ACCORDING TO JAMES A. JOSEPH, PH.D., COAUTHOR OF *THE COLOR CODE* AND LEAD RESEARCHER AT THE USDA HUMAN NUTRITION RESEARCH CENTER ON AGING.

- **Brain Health** Ongoing brain research shows that blueberries may improve motor skills and actually reverse the short-term memory loss that comes with aging.
- **Cancer Prevention** Research shows that blueberry compounds may inhibit all stages of cancer.

PUT THE PYRAMID TO WORK FOR YOU

Eat more fruits and vegetables! That's the latest rallying cry from the USDA, found in the new *Dietary Guidelines for Americans 2005*. Consumers looking for delicious ways to get the recommended amount of fruit into their daily diets — 1 to 2½ cups — will find Wild Blueberries the ideal choice. Just ½ cup of Wild Blueberries delivers one fruit serving and is a good source of dietary fiber. It's a Daily Dose of Blue™ your customers will love.

Potent antioxidants are highly concentrated in the deep-blue pigments of Wild Blueberries. Scientists around the world are studying the ways in which the antioxidant Power of Blue™ may help combat disease and promote healthy aging. The many potential health benefits of Wild Blueberries include:

- **Heart Health** Research indicates that blueberries may protect against heart disease and damage from stroke.
- **Urinary Tract Health** Like cranberries, blueberries may help prevent urinary tract infections.
- **Vision Health** Research around the world has indicated that blueberries may improve night vision and prevent tired eyes.



MyPyramid.gov
STEPS TO A HEALTHIER YOU

THINK *Health,* Think **COLOR**

Antioxidants and other beneficial phytonutrients are concentrated in the pigments of deeply colored fruits and vegetables — that's why color is the key to healthy eating.



The National 5 A Day Partnership recommends eating a variety of colorful fruits and vegetables every day to get the full spectrum of vitamins, minerals and phytonutrients your body needs to stay healthy and energetic. As Dr. James

Joseph, author of *The Color Code* says, "You can't go wrong if you fortify your diet with colorful foods... Think health, think color!"

When it comes to the color blue, think Wild Blueberries.

NOT JUST BLUEBERRIES

WILD BLUEBERRY GROWING AREAS



THE WILD ADVANTAGE

*A*ll blueberries
are not alike!

For food product designers,
Wild Blueberries from Maine and
Canada offer many advantages over their
cultivated cousins. Smaller and more compact, with a
more intense flavor, they freeze extraordinarily well and perform
beautifully in a wide range of applications. Wild Blueberries also have more
total antioxidant capacity than cultivated blueberries, and generally more beneficial
antioxidant and phenolic compounds — making them a winning choice for
your blueberry products.

EXTRAORDINARY TASTE

A unique mixture of sweet and tangy Wild Blueberry
varieties produces a delicious burst of flavor that you
just can't duplicate with other berry ingredients. This
means your Wild Blueberry products will have a
remarkable, memorable taste your customers will love.



Wild BLUEBERRIES.™

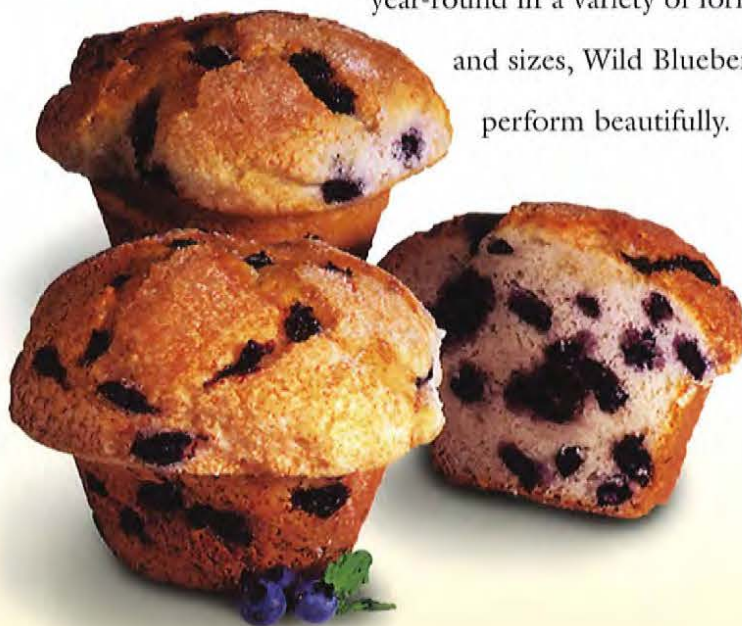
SPECIAL SIZE

Naturally smaller and more compact, Wild Blueberries deliver more berries per pound — up to three times more berries than cultivated, highbush blueberries. Your products will show more of the juicy blueberries consumers are looking for, with more Wild Blueberry taste in every bite.

SUPERIOR PERFORMANCE

Wild Blueberries add flavor while maintaining their taste, texture, shape and color throughout a variety of manufacturing processes. In fact, individually quick frozen (IQF) Wild Blueberries maintain their quality for up to two years and can be used frozen in food preparation for easy handling. Available

year-round in a variety of forms and sizes, Wild Blueberries always perform beautifully.



MARKETABLE

Mystique

By nature, Wild Blueberries have a “wild mystique” all their own. One of only three berries native to North America, they have an appealing “wild imagery” that powerfully distinguishes Wild Blueberry products from all others. Add to that their status as health heroes and you have a proven way to bring added value and excitement to your product line.



CHOOSE THE HEALTHY

MANUFACTURERS

With their reputation as a healthful ingredient spreading around the world, Wild Blueberries are turning up everywhere, in products of all kinds. From cereals and muffin mixes to jams and jellies, from teas and juices to yogurt, smoothies and ice cream, Wild Blueberry is an ingredient that adds taste, color and extra-healthy appeal.

BAKERIES

Wild Blueberries have an intense flavor and juicy texture that bakers prefer. And, because they're smaller and more compact, they hold their shape,

color and flavor,

while keeping baked products moist. As a result, muffins, pies, cakes and bagels have more of the look and taste your customers love — with the antioxidant goodness they're looking for.



THEY *Ingredient.*

FOODSERVICE

Chefs know the value of a distinctive, premium ingredient like Wild Blueberries. Whether it's creating excitement with signature dishes or developing menu items with healthier, good-for-you properties, foodservice professionals appreciate the versatility, the colors and flavors, the ease of handling — the irresistibly healthy aura — that Wild Blueberries bring to the table.



NUTRACEUTICALS AND FUNCTIONAL FOODS

In Japan and Europe, interest in Wild Blueberries as a functional food has been strong for more than a decade — and Americans are catching on fast. Whether it's improving eyesight, defending against heart disease, cancer and Alzheimer's disease or maintaining urinary tract health, Wild Blueberries have what it takes in today's fast-growing functional food marketplace.

RETAIL FROZEN FRUIT

Within the fast-growing frozen-fruit segment of the retail marketplace, Frozen Wild Blueberries are superstars. As demand for Wild Blueberries has soared, more and more major food shopping outlets are stocking premium Frozen Wild Blueberries in convenient consumer packages year-round. The FDA has concluded that frozen fruits and vegetables are just as healthy as fresh and may even retain their nutritional value longer — which is good news for consumers who want the Power of Blue™ every day.



THE *Breakfast* BERRIES™

Your customers can get a healthy start every morning with easy and delicious Frozen Wild Blueberries. Just a half-cup of Wild Blueberries on cereal or blended into a smoothie delivers a daily fruit serving that's packed with antioxidants. Frozen Wild Blueberries are versatile, convenient and intensely flavorful — no wonder they're *The Breakfast Berries.™*



WILD BLUEBERRY *Forms.*



FORM	TRADE PACK	CONSUMER PACK	AVAILABILITY
INDIVIDUALLY QUICK FROZEN (IQF)	●	●	YEAR-ROUND
DRIED/DEHYDRATED/ SUGAR-INFUSED	●	●	YEAR-ROUND
CANNED	●	●	YEAR-ROUND
GLASS JARS		●	YEAR-ROUND
CONCENTRATE	●		YEAR-ROUND
PURÉE	●		YEAR-ROUND
POWDER	●		YEAR-ROUND
EXTRACT	●	●	YEAR-ROUND
FRESH	●	●	AUGUST TO SEPTEMBER
FROZEN FRESH	●	●	YEAR-ROUND

WILD BLUEBERRY FORMS

Highly versatile Wild Blueberries are the answer to today's most challenging product development needs. Available year-round, the berries can be purchased in a wide variety of forms, in sizes convenient to both the trade and consumers. Wild Blueberries perform beautifully, maintaining their taste, texture, shape and color throughout the manufacturing process.

NEW FORMS TO MEET YOUR NEEDS

Today, Wild Blueberries are available in virtually any format you need — with new, innovative forms emerging as part of the industry's ongoing R&D effort. Our product developers are continually striving to address new product development challenges and improve the performance of existing ingredient forms.

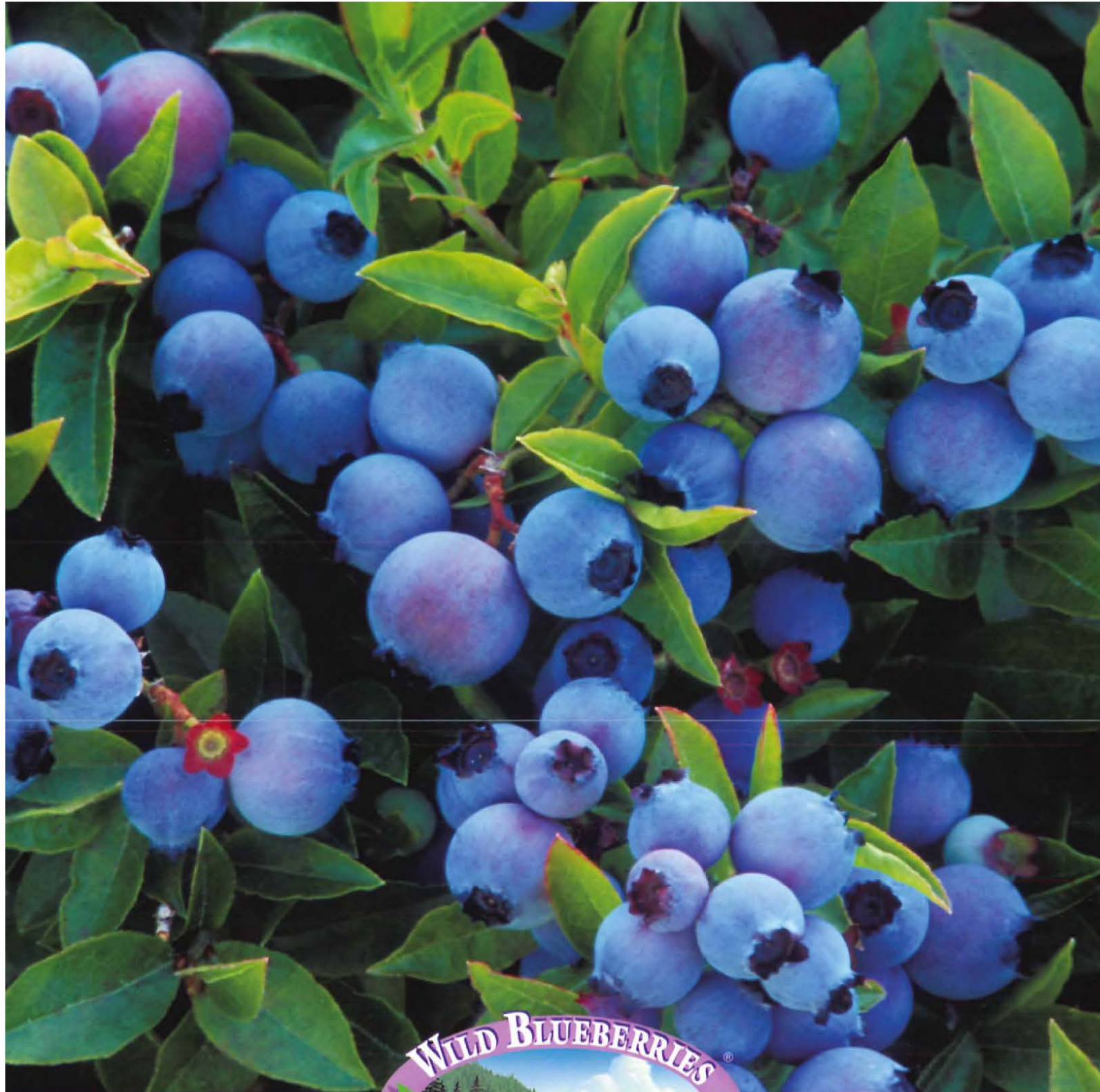


INGREDIENT BRANDING WITH *Wild* BLUEBERRIES.

It pays to tell your customers you're using delicious, antioxidant-rich Wild Blueberries by putting the words "Wild Blueberry" into your product name and by putting the Wild Blueberry certification mark on your package.

To learn how you can license the certification mark, contact the Wild Blueberry Association of North America at WILDBLUEBERRIES@GWI.NET or on the Web at WWW.WILDBLUEBERRIES.COM. We'll help you with your ingredient branding opportunities and add value to your products with Wild Blueberries, the ingredient that says "healthy."





WWW.WILDBLUEBERRIES.COM

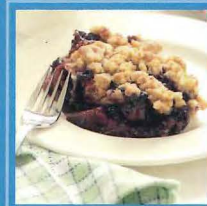
Wild Blueberries

OLD FASHIONED WILD BLUEBERRY GRUNT

- 3 cups Wild Blueberries
- 1/3 cup water
- 1/2 cup sugar

DUMPLINGS

- 1 cup flour
- 2 teaspoons baking powder
- 1/4 teaspoon salt
- 2 teaspoons sugar
- 1 tablespoon butter or soft margarine or shortening
- 1/3-1/2 cup low-fat milk
- 1/8 teaspoon cinnamon if desired



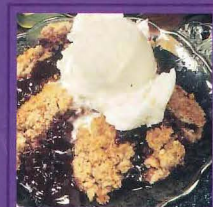
Combine Wild Blueberries with sugar and water in a large saucepan and bring to a boil. Reduce heat and simmer until berries are soft and begin to thicken – about 5 minutes. Mix flour, baking powder, sugar and salt together. Cut in butter. Gradually stir in enough milk to make a soft dough. Drop the batter by tablespoons on top of the simmering berry sauce. Immediately cover saucepan and cook over low-medium heat 15-18 minutes. Serves 4-6

WILD BLUEBERRY CRISP

- 1/2 cup white flour
- 2 teaspoons cinnamon
- 1 teaspoon nutmeg
- 1/2 cup light brown sugar
- 1/2 cup chopped pecans (optional)
- 1/2 cup rolled oats
- 1/8 teaspoon salt (optional)
- 3 tablespoons butter or soft margarine

FILLING

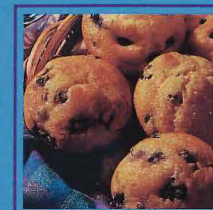
- 5 cups Wild Blueberries
- 1 cup diced, peeled apples (2 medium)
- 1/4 cup sugar
- 1/2 teaspoon grated lemon rind



Preheat oven to 325° F. Grease 8 x 8 x 2-inch pan. In a small bowl, combine Wild Blueberries, sugar, lemon rind and apples. Mix well and pour into prepared pan. In a medium bowl, combine brown sugar, cinnamon, nutmeg, flour, pecans, oats and salt. Rub in butter with your fingers until mixture resembles coarse crumbs. Spread evenly over Wild Blueberry filling and bake 45 minutes or until crust is brown. Serves 6

WILD BLUEBERRY WALNUT BRAN MUFFINS

- 1 1/4 cup all-purpose flour (can substitute with half whole wheat flour)
- 1/2 cup sugar
- 1 tablespoon baking powder
- 1/4 teaspoon salt
- 1 1/4 cup fat-free milk
- 2 cups bran cereal
- 1 lg. egg or 2 whites
- 1 teaspoon vanilla
- 1/4 cup vegetable oil (such as canola oil)
- 3 cups Wild Blueberries
- 1 1/2 cups walnuts
- 3 tablespoons brown sugar (optional)



Preheat oven to 375°F. In large bowl, combine bran cereal and milk. Let stand about 5 minutes or until softened. Sift together flour, sugar, baking powder and salt. Set aside. Add egg and oil to softened cereal mixture and mix thoroughly. Add flour mixture, stirring until just combined. Do not beat. Fold in walnuts. Gently fold in Wild Blueberries. Portion evenly in 12, 2 1/2-inch muffin tins coated with cooking spray. (Optional: sprinkle uncooked muffins with brown sugar.) Bake 25-30 minutes. If frozen berries are used, add 5-10 minutes to cooking time.

TASTY WILD BLUEBERRY ICE

- 2 cups frozen Wild Blueberries
- 4 tablespoons fresh lemon juice
- 1/2 cup sugar
- 1/2 cup water



Process in a food processor or blender until pureed. Serve immediately or place in freezer, covered. To serve, thaw (20-30 min) and stir to desired consistency. Serve in hollowed-out oranges or small dessert bowls. Garnish with mint leaves or thin lemon slices. Serves 4

LEMON GLAZED WILD BLUEBERRY CAKE

- 2 1/2 cups Wild Blueberries
- 1 1/2 cups all purpose flour
- 3/4 cup sugar
- 1 tablespoon baking powder
- 3/4 teaspoon grated lemon peel
- 1 lg. egg or 2 whites
- 1/2 cup skim milk
- 2 tablespoons applesauce
- 2 tablespoons melted light butter
- 1 teaspoon fresh lemon juice
- 1/4 teaspoon salt

LEMON GLAZE

- 2 tablespoons light butter
- 1 tablespoon fresh lemon juice
- 1/4 cup sugar



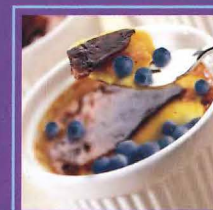
Preheat oven to 350°F. Lightly grease 8 x 8 x 2-inch pan. Rinse fresh Wild Blueberries. If using frozen berries, partially thaw in microwave for 30 seconds. Drain if necessary. In small bowl, combine flour, sugar, baking powder, lemon peel and salt. In another bowl mix egg, milk, applesauce, melted light butter, and lemon juice until well blended. Add to flour mixture, folding gently to combine. Do not overmix. Batter will be stiff. Gently fold in Wild Blueberries. Spread batter in prepared pan. Bake 30-35 minutes. If frozen berries are used, add 5-10 minutes to cooking time. When cake tests done, pour lemon glaze evenly over the top. Return glazed cake to the oven and broil 3-5 inches from heat until glaze begins to bubble, being careful not to allow sugar to burn.

LEMON GLAZE

Melt light butter, stir in 1/4 cup sugar, and 1 tablespoon lemon juice. Cook and stir over low heat until the mixture is bubbling. Remove from heat and follow cake directions above. Serves 9

WILD BLUEBERRIES À LA CREME BRULÉE

- 2 cups Wild Blueberries
- 2/3 cup low-fat sour cream
- 1/2 cup low-fat vanilla yogurt
- 1/8 teaspoon cinnamon (optional)
- 1/3 cup brown sugar



Divide Wild Blueberries between 4 heat-proof ramekins. Combine sour cream, yogurt and cinnamon and spread over Wild Blueberries, covering completely. Sprinkle brown sugar over cream mixture and broil 3 inches from heat source until sugar bubbles and caramelizes, approximately 3-5 minutes. Serve while topping is still hot. Serves 4

WILD BLUEBERRY VINAIGRETTE

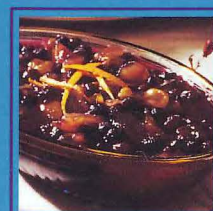
- 1/2 cup olive oil
- 1/4 cup red wine or cider vinegar
- 2 tablespoons balsamic vinegar
- 1 clove garlic, minced
- 2 teaspoons prepared mustard
- 1/2 teaspoon salt
- 1/4 teaspoon pepper
- 1/2 cup Wild Blueberries



Combine all ingredients except Wild Blueberries in a jar and shake until thoroughly blended. Or whisk thoroughly in a bowl. Add Wild Blueberries. Store in refrigerator. Makes 1 1/2 cups

AMAZING WILD BLUEBERRY SALSA

- 2 cups Wild Blueberries
- 1/2 cup onion (red or white), diced small
- 1 jalapeno pepper, seeded and minced (add more to taste)
- 1 medium red bell pepper, diced small
- 3 tablespoons chopped parsley or cilantro
- 1/4 cup lime or lemon juice
- 1 teaspoon salt
- pinch of cinnamon



Combine all ingredients, folding in Wild Blueberries last. Refrigerate 1 hour or more to blend flavors. Serve with corn chips or use as a relish with meat and poultry dishes. Serves 6-8

The POWER of BLUE™



EASY, HEALTHY AND DELICIOUS

Wild Blueberry

RECIPES



Wild Blueberries



**GET BLUE. GET WILD.
GET HEALTHY!**

Sweet and tangy Wild Blueberries from Downeast Maine are the healthy little berries with great big taste. Wild Blueberries are rich in natural “blue” phytonutrients — antioxidants and anti-inflammatories that may help protect against cancer, heart disease, Alzheimer’s disease and the effects of aging. This makes them powerful allies in the quest for good health.

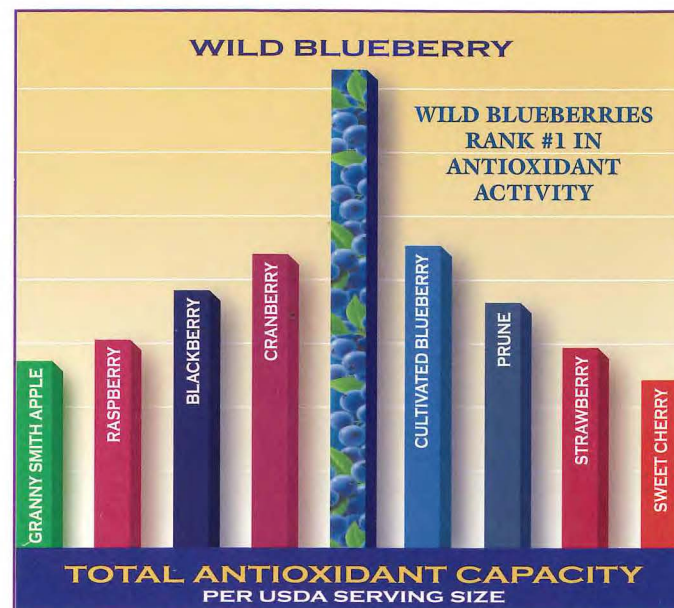


MORE OF THE POWER OF BLUE™

Not all blueberries are alike! Generally, Wild Blueberries have more beneficial antioxidant and phenolic compounds than their larger, cultivated cousins.¹ Another reason to choose Wild Blueberries from Maine!

NATURE’S #1 ANTIOXIDANT FRUIT™

Wild Blueberries may be small but they pack a healthy punch. USDA studies show that Wild Blueberries rank #1 in antioxidant activity compared with more than 20 other fruits.²



HEALTH BENEFITS OF BLUE

- **BRAIN HEALTH:** Ongoing brain research shows that blueberries may improve motor skills and actually reverse short-term memory loss that comes with aging.
- **CANCER PREVENTION:** Research shows that blueberry compounds may inhibit all stages of cancer.
- **HEART HEALTH:** Research indicates that blueberries may protect against heart disease and damage from stroke.
- **URINARY TRACT HEALTH:** Like cranberries, blueberries may help prevent urinary tract infections.
- **VISION HEALTH:** Research around the world has indicated that blueberries may improve night vision and prevent tired eyes.

¹ Journal of Agricultural and Food Chemistry, 2001, 49:4761-4767

² Journal of Agricultural and Food Chemistry, 2004, 52:4026-4037

YOUR DAILY DOSE OF BLUE!™

Get the Power of Blue™ every day by adding fresh or frozen Wild Blueberries to cereal, smoothies, salads and dinner entrees. Just a half cup is all you need to satisfy one of your recommended 5 A Day servings of colorful fruits and vegetables.



PERFECTLY FROZEN PERFECTLY HEALTHY

Frozen Wild Blueberries are a perfect everyday health habit. You’ll find them year-round in the frozen food section of your supermarket — keep them in your own freezer for daily use.



Wild Blueberries are fresh-frozen at harvest, so they retain their great taste and healthy antioxidant goodness. In fact, according to the FDA, frozen fruits and vegetables are just as healthy as fresh and may even retain their nutritional value longer. So enjoy the ease and convenience of using delicious frozen Wild Blueberries — right out of the freezer — in your favorite recipes.



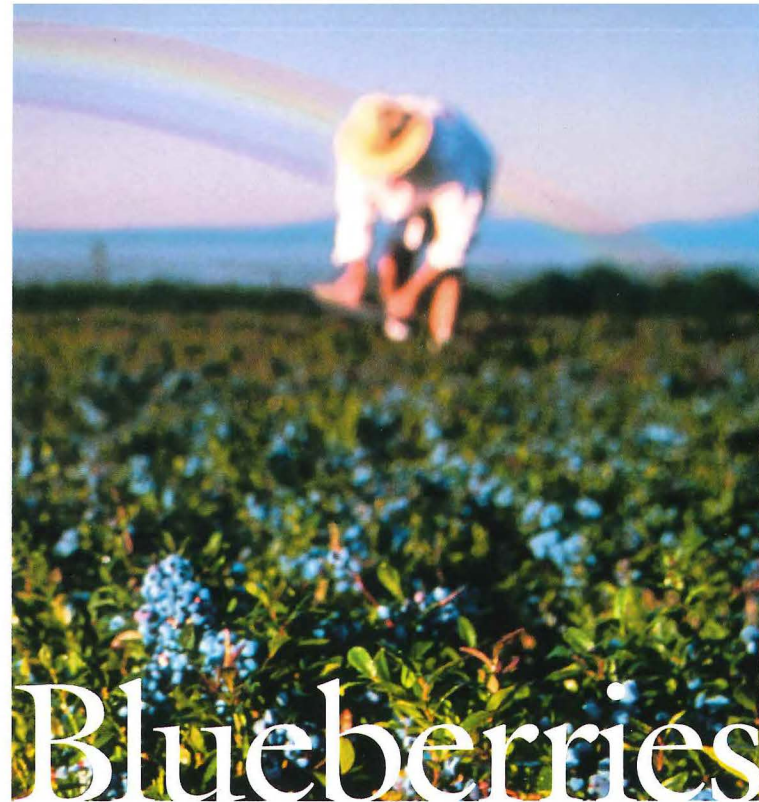
NOT JUST BLUEBERRIES, WILD BLUEBERRIES!™

QUICK AND EASY WAYS TO USE WILD BLUEBERRIES:

- Add ½ cup to your morning cereal
- Toss them into pancake or muffin batter
- Sprinkle them into your garden salad or fruit salad
- Blend 6 ounces Wild Blueberries, 6 ounces plain, vanilla or blueberry yogurt, a tablespoon of honey (if plain yogurt is used) and 3 ice cubes for a delicious Wild Blueberry smoothie.



www.wildblueberries.com
©2005 Wild Blueberry Association of North America



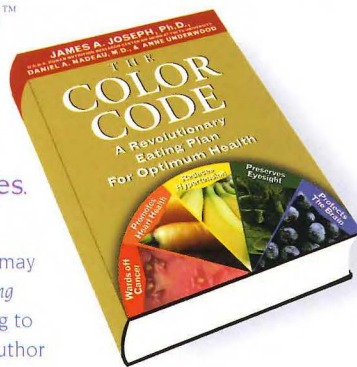
Blueberries

vitamins, minerals and phytochemicals your body needs to stay healthy and fit. And the one color everyone's talking about is **BLUE** – as in antioxidant-rich Wild Blueberries – the ones with

The Power of Blue![™]

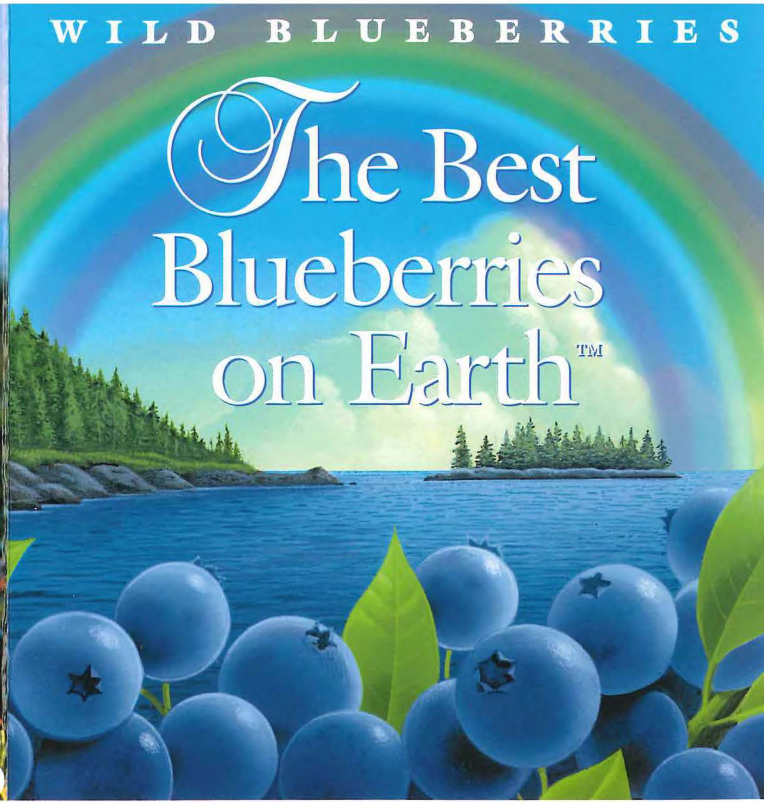
Color your diet healthy and **BLUE** with Wild Blueberries.

Deep-blue Wild Blueberries may be "one of the best age-proofing foods in your diet," according to James A. Joseph, Ph.D., co-author of **The Color Code**.



say eat a rainbow of colors."

— TIME, 2002 Annual Health Issue



WILD BLUEBERRIES

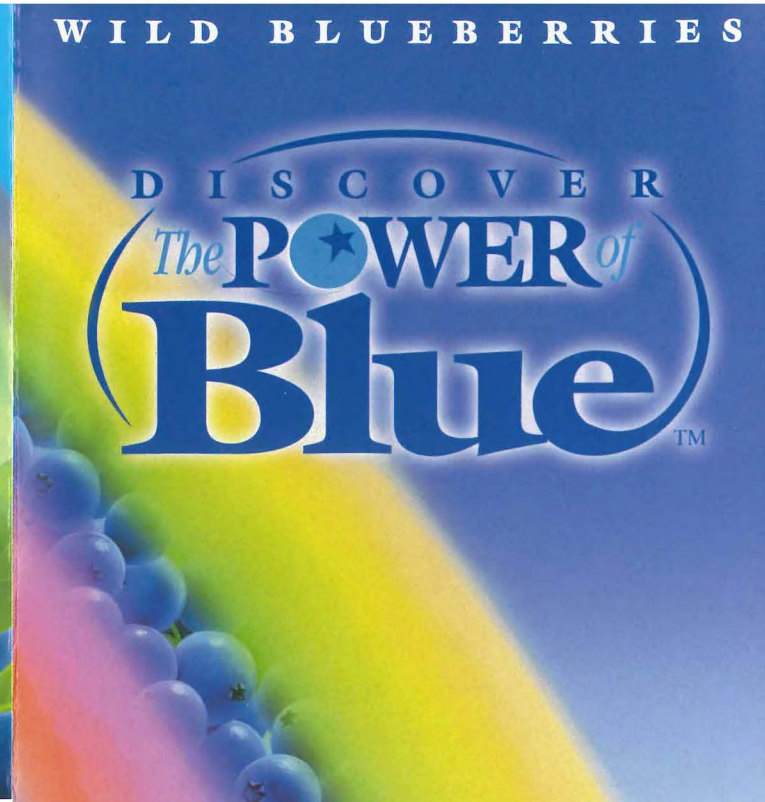
The Best
Blueberries
on Earth[™]

It's the air. It's the ocean. It's the northern nights and sunny days. It's the soil, it's the rain. It's simply Nature's way of producing the best blueberries on earth: Wild Blueberries from Maine, Atlantic Canada and Quebec. Discover irresistibly delicious, amazingly healthy Wild Blueberries – the ones with **The Power of Blue!**[™]



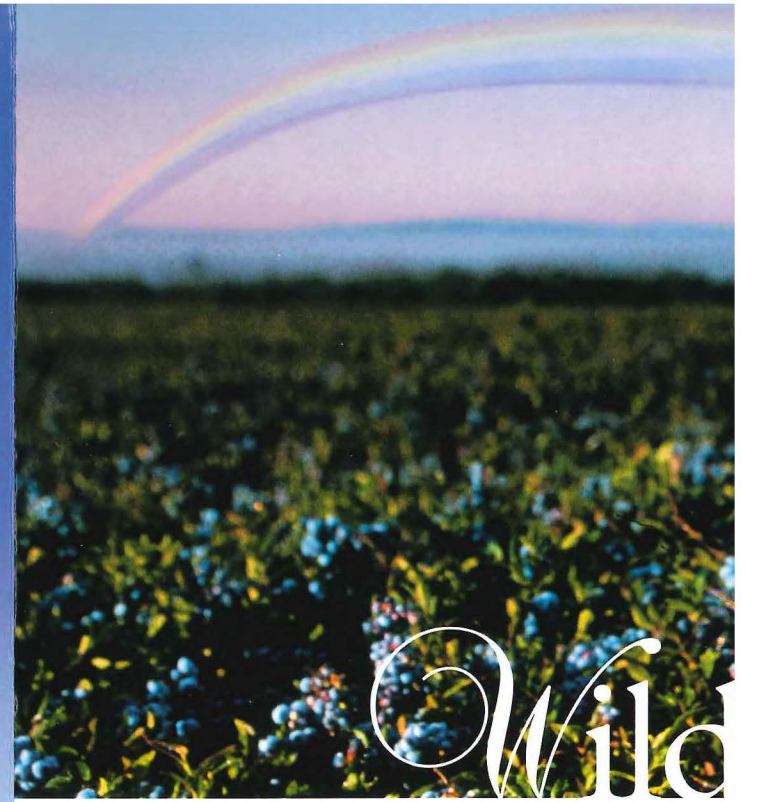
For quick and easy Wild Blueberry recipes, visit:
www.wildblueberries.com

©2002 Wild Blueberry Association of North America



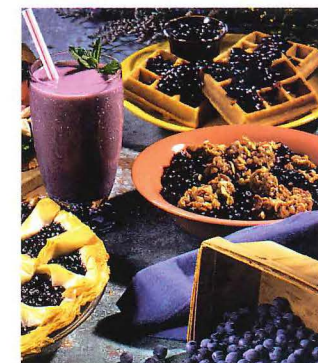
WILD BLUEBERRIES

DISCOVER
The **POWER** of
Blue[™]



Wild

Color Your Diet
Healthy And **Blue**



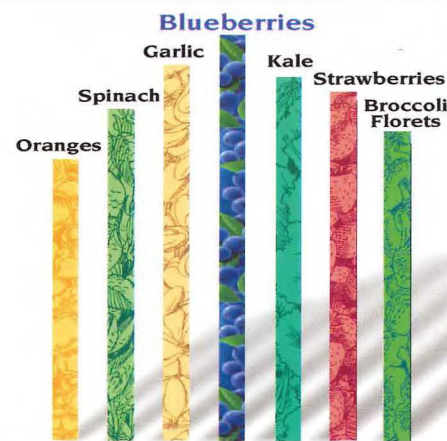
What's the key to healthy eating? Color! In fact, by including a colorful variety of fruits and vegetables in your daily diet, you get the wide range of

"For optimum health, scientist

The Power Of Blue™

COLOR. IT'S THE LATEST WORD in healthy eating. And the hottest color in the spectrum is **Blue** – the color of Nature's #1 Antioxidant Fruit™, Wild Blueberries. Packed with natural blue phytochemicals, Wild Blueberries have more of what your body needs to fight cancer, heart disease and the effects of aging. It's what we call **The Power of Blue™**.

The Power of Blue™



NATURE'S #1 ANTIOXIDANT FRUIT™

USDA Studies measured the antioxidant activity (ORAC) of more than 40 commercially available fruits and vegetables and rated blueberries #1.*

* Source: *Journal of Agricultural and Food Chemistry* 44:701-705; 3426-3431, 1996; 46:2686-2693, 1998.

Breakfast Time



Wake up and think Blue! Add a 1/2 cup of Wild Blueberries to your morning cereal or stir them into yogurt for a healthy start to your day.

Snack Time



Blend a 1/2 cup of Wild Blueberries into your favorite smoothie recipe for a serving of health-promoting natural antioxidants. You can use them right out of the freezer!

Get Wild Blue Get Healthy

WILD BLUEBERRIES may be small, but studies indicate they may have big powers of protection. Research shows that Wild Blueberries generally have more beneficial antioxidant and phenolic content than their larger cultivated cousins.* The many health benefits of Wild Blueberries include:

- **Anti-Aging:** Ongoing brain research shows that blueberries may reverse short-term memory loss and improve motor skills.
- **Urinary Tract Health:** Like cranberries, blueberries may help prevent urinary tract infections.
- **Cancer Prevention:** Research shows that Wild Blueberry compounds may inhibit cancer.
- **Vision Health:** Research has indicated that blueberries may improve night vision and prevent tired eyes.



**Journal of Agricultural and Food Chemistry*, 49: 4761-4767, 2001

Getting Your Daily Dose Of Blue™ Is Easy



YOUR GOAL IS 5 A DAY, SO MAKE ONE BLUE! Just a 1/2 cup of delicious Wild Blueberries satisfies one of your recommended five or more daily servings of colorful fruits and vegetables. And getting your Daily Dose of Blue is so easy!

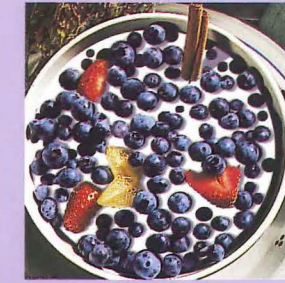
Add Frozen Wild Blueberries to your favorite recipes – right out of the freezer! They're fresh-frozen at harvest, so they keep their great taste and health attributes. In fact, the FDA has concluded that frozen fruits and vegetables are just as healthy as fresh and may even retain their nutritional value longer! Frozen Wild Blueberries are easy, delicious and healthy – that's the convenient **Power of Blue™**.

Dinner Time



Add Wild Blueberries to your salad for a fresh and healthy taste. Just a 1/2 cup is all you need to satisfy one of your 5 daily servings of colorful fruits and vegetables.

Anytime



Want a quick-and-easy treat? Eat them with milk or light cream. Better yet, use your imagination! It's easy and fun to get Wild Blueberries into your diet every day.

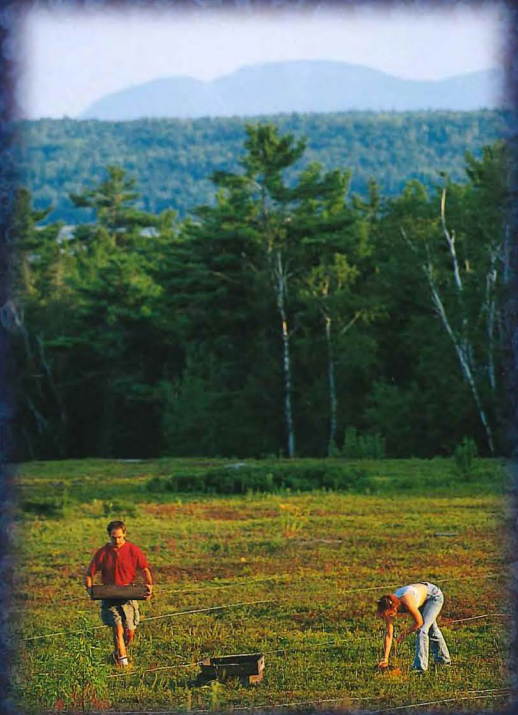
The Power Of Blue™ Every Day



TASTY, VERSATILE AND SO EASY TO USE, Frozen Wild Blueberries are a perfect everyday health habit. You'll find them in your supermarket freezer case year-round – keep them in your own freezer for daily use. You'll also find Wild Blueberries in products of all kinds, from jams and jellies to cereals and muffin mixes, as well as juice, yogurt, pie filling, fruit bars and more. Get your 1/2 cup daily dose of Wild Blueberries and discover the tasty **Power of Blue™** every day.

For recipes and more, visit www.wildblueberries.com

MAINE'S WILD BLUEBERRY LANDS



CAREFULLY MANAGED FOR
TODAY AND TOMORROW

THE WILD BLUEBERRY MAINE'S NATIVE BERRY

Maine's 60,000 acres of Wild Blueberries grow naturally in fields and barrens that stretch from Downeast to the state's southwest corner. Adapted to Maine's naturally acid, low fertility soils and challenging winters, Wild Blueberries are a low input crop requiring minimal management. The berries are grown on a two-year cycle — each year, half of a grower's land is managed to encourage vegetative growth and the other half is prepared for a Wild Blueberry harvest in August. After harvest the plants are pruned to the ground by mowing or burning.



INTEGRATED CROP MANAGEMENT

Because Wild Blueberries are indigenous to Maine, they are naturally resistant to many native pests. Still, there are times when environmental stressors such as disease, drought, insect pest damage and winter injury can ruin much of the fruit. It is the grower's challenge to minimize such crop damage.

To minimize fruit destruction without harming the environment, growers use continually evolving knowledge-based techniques called Integrated Crop Management (ICM) and Integrated Pest Management (IPM). For example, taking leaf tissue



samples to see if plants need to be fertilized is now a common ICM practice. Growers use ICM and IPM throughout the crop cycle to monitor for disease and insect levels that could reduce crop quality and quantity. When critical levels are reached, growers consider a full range of control methods, from cultural techniques to the selective application of pesticides.

LEARNING THROUGH RESEARCH

Since 1945, Maine's Wild Blueberry growers and processors have provided financial support for research at the University of Maine. Through this successful research partnership, improved cropping practices such as ICM and IPM have been



developed. Since the 1980 introduction of the IPM program to monitor and control blueberry fruit fly, the Wild Blueberry's number-one pest, growers have reported a 70% reduction in their insecticide use. As a result of using IPM techniques, there are years when growers do not have to treat their fields at all.

Research has been the foundation upon which Maine's growers have been able to triple the state's production of Wild Blueberries. Thanks to advances in ICM and IPM, Maine's growers are better able to work toward minimizing crop loss while sustaining Maine's Wild Blueberry fields and barrens for future generations.

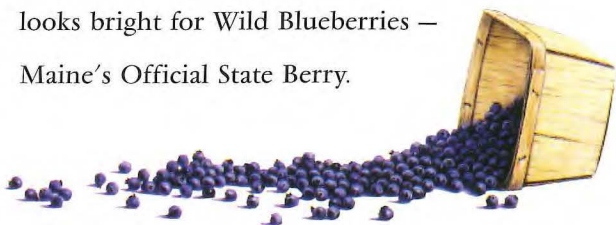


WILD BLUEBERRIES A MAINE TRADITION



The Wild Blueberry holds a special place in Maine's agricultural history — one that goes back centuries, to Maine's Native Americans. They were the first to use the tiny blue berries, both fresh and dried, for their flavor, their nutrition and their healing qualities. In the 1840's, Wild Blueberries were first harvested commercially.

Today, with an annual crop valued at more than \$75 million, Wild Blueberries make a major contribution to Maine's economy. What's more, thanks to new research on the health and nutritional benefits of blueberries, there is a growing demand for both fresh and processed Wild Blueberries in the U.S. and abroad. The future looks bright for Wild Blueberries — Maine's Official State Berry.



PRESERVING MAINE'S WILD BLUEBERRY HERITAGE

Wild Blueberries have become a symbol of Maine's agricultural heritage — a heritage that respects and values our environment. Because growers consider the future well-being of the land, neighbors and visitors can continue to enjoy some of Maine's most scenic vistas and precious wildlife habitats.



To find out more about Maine's Wild Blueberries and the land they grow on, talk with a local Wild Blueberry grower or write to the Wild Blueberry Commission of Maine.



Wild Blueberry Commission OF MAINE

5715 Coburn Hall, Orono, Maine 04469-5715

Wild Blueberry Chutney

1/2 cup (125ml) raspberry vinegar	1 tsp minced lemon rind
1/2 cup (100g) sugar	Pinch of cayenne pepper
1 medium onion, minced	Pinch of salt
1/4 tsp fresh minced ginger	3 cups (450g) Wild Blueberries
1/8 tsp ground cinnamon	1/4 cup (100g) dried cranberries

Combine the vinegar, sugar, onion, ginger, cinnamon, lemon, pepper and salt in a saucepan, bring to a boil and simmer 15 minutes. Add 1 cup (150g) of Wild Blueberries and the cranberries. Simmer 20 minutes, stirring frequently. Add remaining 2 cups (300g) Wild Blueberries and simmer another 10 minutes.

Yields about 1 cup (800g)

SUGGESTIONS FOR SERVING: Use in place of your favorite relish; perfect with pork roast, duck, venison, broiled meats such as chicken or beef; an accompaniment to a festive Thanksgiving or Christmas dinner; topping for turkey, chicken sandwich or roll up; use as an appetizer by topping small wheel of brie cheese with the chutney and serving with crackers or bread.

Wild Blueberry Chicken Breasts

1/2 tsp Cajun spices	2 tsp olive oil
(or more, to taste)	1/3 cup (80ml) red wine
4 halves boneless, skinless chicken breasts	2 cups (300g) Wild Blueberries
3 cloves garlic, finely chopped	1 tsp grated lemon rind
1 medium onion, finely chopped	1/4 tsp salt (optional)

Dust chicken breasts with Cajun spices. Sauté in olive oil until brown and almost cooked through, 7 to 10 minutes. (If thick, cover and cook 3 or 4 minutes more.) Remove chicken breasts from pan and keep warm. In same pan, sauté garlic and onion until transparent, scraping remaining bits of chicken from bottom of pan. Add red wine and cook down until most of the liquid is evaporated. Add Wild Blueberries, lemon rind and salt. Simmer for 5 minutes. (If Wild Blueberries are frozen, until berries are heated through.) Add salt and pepper to taste. Let sit for 5 minutes, heat off, for flavors to blend. Spoon over chicken breasts and serve.

Serves 4

Wild Blueberry Crisp

FILLING

5 cups (750g) Wild Blueberries
1/4 cup (50g) sugar
1/2 teaspoon grated lemon rind
1 cup (2 medium) diced, peeled apples

CRISP

1/2 cup (80g) light brown sugar
2 teaspoons cinnamon
1 teaspoon nutmeg
1/2 cup (60g) white flour
1/2 cup (50g) chopped pecans (optional)
1/2 cup (40g) rolled oats
3 tablespoons (40g) butter or soft margarine (not diet)
1/8 teaspoon salt (optional)

Preheat oven to 325 degrees F. (165 degrees C.)

FILLING: In a small bowl, combine the Wild Blueberries, sugar, lemon rind and apples. Mix well and place in a well-buttered 8 x 8 x 2-inch (20 x 20 x 5cm) pan.

CRISP: In a medium bowl, combine brown sugar, cinnamon, nutmeg, flour, pecans, oats, salt and rub in the butter with your fingers until the mixture resembles coarse crumbs. Spread evenly over the Wild Blueberry filling. Bake 45 minutes or until the crust is brown.

Serves 6

Wild Blueberry Sauce

2 cups (300g) Wild Blueberries
1/2 cup (130ml) water
1/4 cup (50g) sugar
1 teaspoon fresh lemon juice
2 teaspoons cornstarch

In a small saucepan, combine 1 cup (150g) Wild Blueberries, 1/4 cup (65ml) water, sugar and lemon juice. Stir and bring to a boil. Turn down heat, simmer 7 to 10 minutes. Mix the cornstarch into 1/4 cup (65ml) water until dissolved and add to the Wild Blueberry mixture; stir until it thickens, then add the remaining cup (150g) of Wild Blueberries. Cook 3 minutes on low heat.

Yields about 1 cup (800g) (four servings)

Wild Blueberry Smoothie

6 ounces (180g) Wild Blueberries (fresh or frozen)
6 ounces (180g) yogurt (vanilla or blueberry)
1 tablespoon honey (if plain yogurt is used)
1/2 cup ice (3 ice cubes)

Blend well at high speed. Serve immediately. *Serves 2*

Wild Blueberry Phyllo Pie

FILLING

3/4 cup (150g) sugar	6 cups (900g) Wild Blueberries
3 tablespoons cornstarch	
1 teaspoon cinnamon	1-1/2 tablespoons fresh lemon juice

FAT-FREE PHYLLO CRUST

2 teaspoons sugar
1 teaspoon all-purpose flour
4-5 sheets phyllo

LATTICE CRUST: 1 sheet phyllo

FILLING: In a 4-quart (4-liter) saucepan, combine sugar, cornstarch and cinnamon and mix well. Add Wild Blueberries and sprinkle with lemon juice. Toss lightly to combine. Cook and gently stir over medium heat until mixture comes to a boil. Cook and stir 2 additional minutes. Remove from heat and transfer to prepared phyllo crust.

CRUST: Lightly coat a 9-inch (22cm) pan with nonstick vegetable oil spray. In a small bowl, combine the sugar and flour and set aside. Stack phyllo sheets and cut them in half, crosswise. Cover the sheets with a slightly damp cloth until ready to use. Take one sheet and layer it on the pie pan. Coat it lightly with the vegetable oil spray and sprinkle about 1/2 teaspoon of sugar mixture over it. Repeat with remaining sheets, layering clockwise at 1-inch intervals until entire pie pan rim is covered. Trim excess phyllo with kitchen shears.

Preheat oven to 350 degrees F. (175 degrees C.)

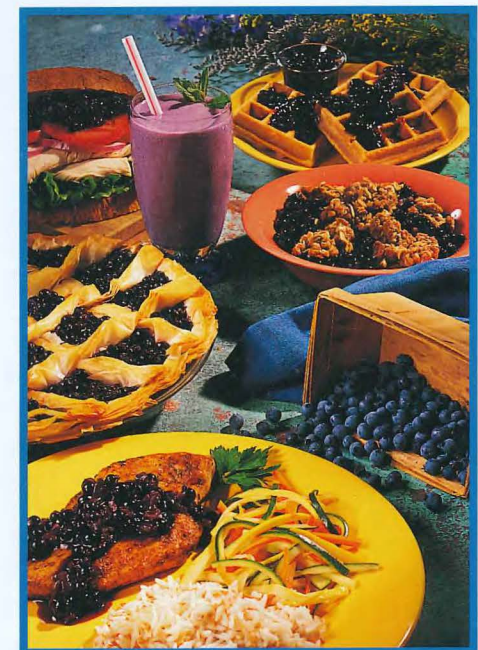
LATTICE CRUST: Cut phyllo sheet in half crosswise. Lightly coat each half sheet with nonstick vegetable oil spray. Stack the 2 layers and fold lengthwise. Cut into 6 strips. Twist the strips and arrange them over the pie filling, 3 horizontal and 3 vertical strips.

Bake pie 20 to 25 minutes, or until phyllo is golden. Cool and serve at room temperature.

Serves 8

Wild Blueberries

NATURE'S ANTIOXIDANT POWERHOUSE



HEALTHY LITTLE BERRIES
WITH GREAT BIG TASTE



RECIPES INSIDE

WILD BLUEBERRIES

IN THE BEAUTIFUL FIELDS OF MAINE AND EASTERN CANADA, WILD BLUEBERRIES HAVE GROWN NATURALLY FOR THOUSANDS OF YEARS. SMALLER THAN CULTIVATED BLUEBERRIES, LOWBUSH WILD BLUEBERRIES ARE ONE OF THREE BERRIES NATIVE TO NORTH AMERICA. LONG BEFORE EUROPEAN SETTLERS CAME TO THE NEW WORLD, NATIVE NORTH AMERICANS HAD ALREADY DISCOVERED THE MAGIC OF THE WILD ONES!

NATURE'S ANTIOXIDANT POWERHOUSE

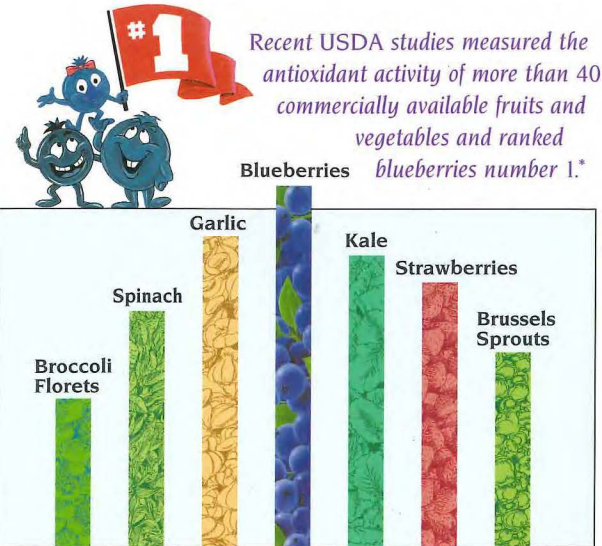
Recent USDA studies show that Wild Blueberries are a tasty way to eat right! Compared with other fruits and vegetables, blueberries are number one in antioxidant activity. For the antioxidant power your body needs, choose a daily dose of irresistibly delicious Wild Blueberries.



ANTIOXIDANTS FIGHT AGING, CANCER AND HEART DISEASE

Every day, the cells in our body wage a battle against free radicals — unstable oxygen molecules associated with cancer, heart disease and the effects of aging. Antioxidants come to the rescue. These natural substances, found in fruits

*Source: Journal of Agricultural and Food Chemistry, 44:701-705; 3426-3343, 1996; 46:2686-2693, 1998.

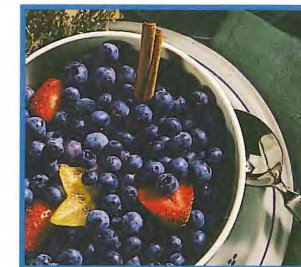


In 1997, scientists at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University ranked blueberries number one in antioxidant activity compared with 40 other commercially available fruits and vegetables.* That means a serving of blueberries has more of the antioxidant power you need to stay healthy.

and vegetables, neutralize free radicals and protect against disease and age-related health risks. Powerful antioxidants include phytochemicals such as anthocyanins, the deep blue and red pigments of fruits like Wild Blueberries.

A DAILY DOSE OF BLUE: THE TASTIEST WAY TO GET YOUR ANTIOXIDANTS

For great taste and antioxidant power, there's no better choice than a daily dose of Nature's best blueberries: the Wild Ones. One-half cup of Wild Blueberries delivers as much antioxidant power as four servings of other leading antioxidant fruits and vegetables. And there's more good news: the FDA has concluded that frozen fruits and vegetables are just as healthy as fresh and may even retain their nutritional value longer. It's a great reason to look for frozen Wild Blueberries in your supermarket year-round.



ANTIOXIDANTS AND MORE!

In addition to their high antioxidant capacity, blueberries have other exciting health benefits. Studies show that blueberries, like cranberries, have a unique component that's useful in treating and preventing urinary tract infections.

EASY, HEALTHY & DELICIOUS

To help provide the antioxidant nutrients and other natural substances your body needs, nutritionists recommend five to ten servings of fruits and vegetables every day. Eating right is easy and delicious with Wild Blueberries:

- Toss them into cereals, salads, and entrees
- Add them to pancakes, waffles, and muffins
- Make a Wild Blue shake, smoothie or health drink
- Go Wild with ice cream, yogurt and your favorite desserts

WILD BLUEBERRIES: GO WILD IN THE SUPERMARKET!

Look for frozen, dried, jarred and canned Wild Blueberries in your supermarket; you'll also find them in jams, cereals, baked goods and many other products throughout the store. For more information about healthy and delicious Wild Blueberries, including antioxidant research, recipes, and nutritional information, visit our Web site at www.wildblueberries.com.



HEALTHY LITTLE BERRIES WITH GREAT BIG TASTE

59 Cottage Street, P.O. Box 180, Bar Harbor, Maine 04609-0180 USA
51 Teakwood Court, Truro, Nova Scotia B2N 6H1 Canada
Wild Blueberry Characters TM & © 1997 Wild Blueberry Association of North America

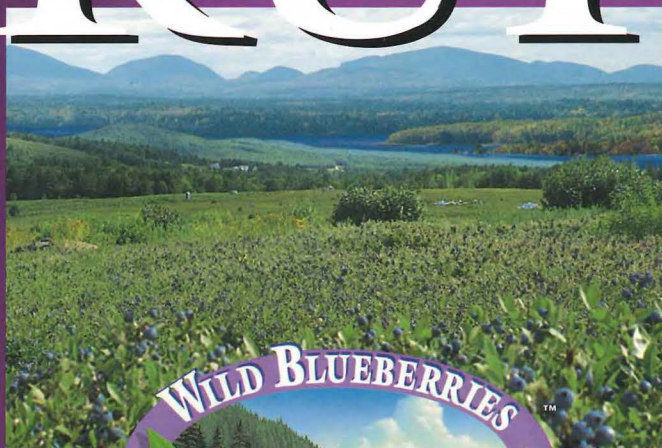
WILD BLUEBERRIES

Nature's

NUMBER
ONE

Antioxidant

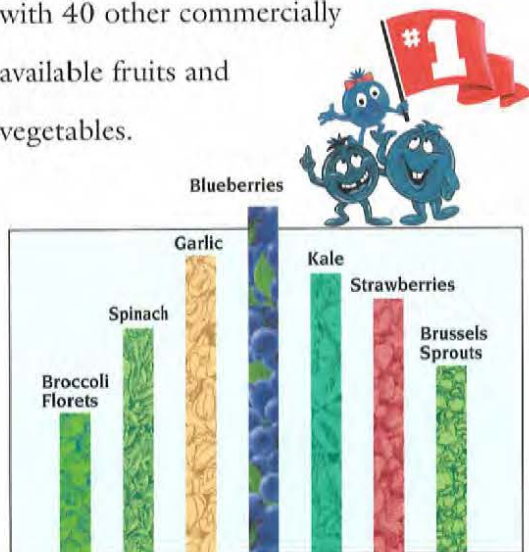
FRUIT™



DISCOVER NAT

BLUEBERRIES ARE #1 IN USDA STUDY

Recent USDA studies show that blueberries deliver a potent antioxidant punch. In research conducted by Dr. Ronald L. Prior of the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, blueberries were ranked **number one** in antioxidant activity compared with 40 other commercially available fruits and vegetables.



Recent USDA studies measured the antioxidant activity of more than 40 commercially available fruits and vegetables and ranked blueberries #1.*

THE ORAC LEADER

Blueberries emerged as the top antioxidant capacity fruit in a laboratory testing procedure called Oxygen Radical Absorbance Capacity — ORAC — developed by the USDA. ORAC is recognized as the definitive measurement of antioxidant capacity.

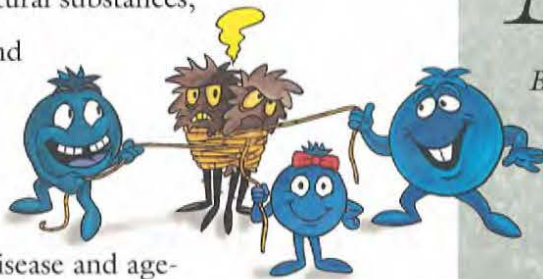
That means blueberries — fresh, frozen or dried — have more of the antioxidant power today's health-conscious consumers are looking for.

* Source: *Journal of Agricultural and Food Chemistry*, 44:701-705; 3426-3431, 1996; 46:2686-2693, 1998.

NATURE'S TASTIEST

ANTIOXIDANTS FIGHT AGING, CANCER AND HEART DISEASE

Every day, our cells wage a battle against free radicals — unstable oxygen molecules associated with cancer, heart disease and the effects of aging. Antioxidants come to the rescue. These natural substances, found in fruits and vegetables, neutralize free radicals and protect against disease and age-related health risks. Powerful antioxidants include phytochemicals such as anthocyanins, which are highly concentrated in the deep blue pigments of Wild Blueberries.



“One-half cup of blueberries delivers as much antioxidant power as five servings of other fruits and vegetables — such as peas, carrots, apples, squash and broccoli.”

RONALD L. PRIOR, PH.D.

SUPERVISORY RESEARCH CHEMIST, JEAN MAYER USDA HUMAN NUTRITION RESEARCH CENTER ON AGING, TUFTS UNIVERSITY

THE WILD ONES: MORE HEALTHY BLUE COLOR

New research shows
that Wild

Blueberries generally have more anthocyanin than their cultivated cousins. High levels of anthocyanin, a natural antioxidant, make Wild Blueberries powerful allies in the fight against aging, heart disease and cancer.

ANTIOXIDANT

ANTI-AGING RESEARCH: THE NEW BRAIN FOOD



Dr. James Joseph and Dr. Shukitt-Hale at Tufts University measure the impact of a blueberry extract diet on the memory capacity of rats.

According to scientists at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, a diet of blueberries may improve motor skills and reverse the short-term memory loss that comes with aging. In USDA trials at Tufts, older rats improved their navigational

skills, balance, coordination and speed after two months of being on a diet of blueberry extract. Although other fruits and vegetables were studied, only blueberries were effective in reversing short-term memory loss.

“The blueberry has emerged as a very powerful food in the anti-aging battle. Given the possibility that blueberries may reverse short-term memory loss and forestall other effects of aging, their potential may be very great.”

JAMES JOSEPH, PH.D.
CHIEF, NEUROSCIENCE LABORATORY,
USDA HUMAN NUTRITION RESEARCH CENTER
ON AGING, TUFTS UNIVERSITY

MORE BENEFITS OF BLUE

URINARY TRACT HEALTH. At the Rutgers Blueberry Cranberry Research Center, scientist Amy Howell showed that

blueberries, like cranberries, contain compounds that prevent the bacteria responsible for urinary tract infections from attaching to the bladder wall.

CANCER PREVENTION. New research conducted by M.A.L. Smith, Ph.D., of the University of Illinois, indicates that compounds in Wild Blueberries are effective inhibitors of both the initiation and promotion stages of cancer.

PROMOTING VISION HEALTH. Research around the world has indicated that blueberries can improve night vision and prevent tired eyes.



THE POWER OF BLUE

CONSUMERS WANT THEIR DAILY DOSE OF BLUE™

Every day, consumers hear more good news about the remarkable health benefits of Wild Blueberries. Rich in blue antioxidants, Wild Blueberries are nutraceutical superstars. Called “Miracle Berries” by *Prevention*, “Super Food” by *Health*, and “Fruit of the Year” by *Eating Well*, little blueberries are making big news as Nature’s healthy blue food. No wonder consumers want their *Daily Dose of Blue!*



*“If you add
one food to
your diet this
year, make it
blueberries.”*

PREVENTION Magazine
JUNE 1999

THE #1 FRUIT INGREDIENT CHOICE

Wild Blueberries are clearly an ingredient that adds new value and excitement to products of all kinds. In every form — frozen, dried, concentrate, powder or extract — Wild Blueberries deliver both antioxidant power and extraordinary taste. That’s why Wild Blueberries are predicted to be the hottest ingredient of the new millennium! For health and sourcing information about Wild Blueberries, contact the Wild Blueberry Association of North America (WBANA).

NATURE’S
ANTIOXIDANT FRUIT™



1-800-Add-Wild
www.wildblueberries.com
e-mail: inquiries@wildblueberries.com

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NUMBER ONE

In Antioxidant Activity

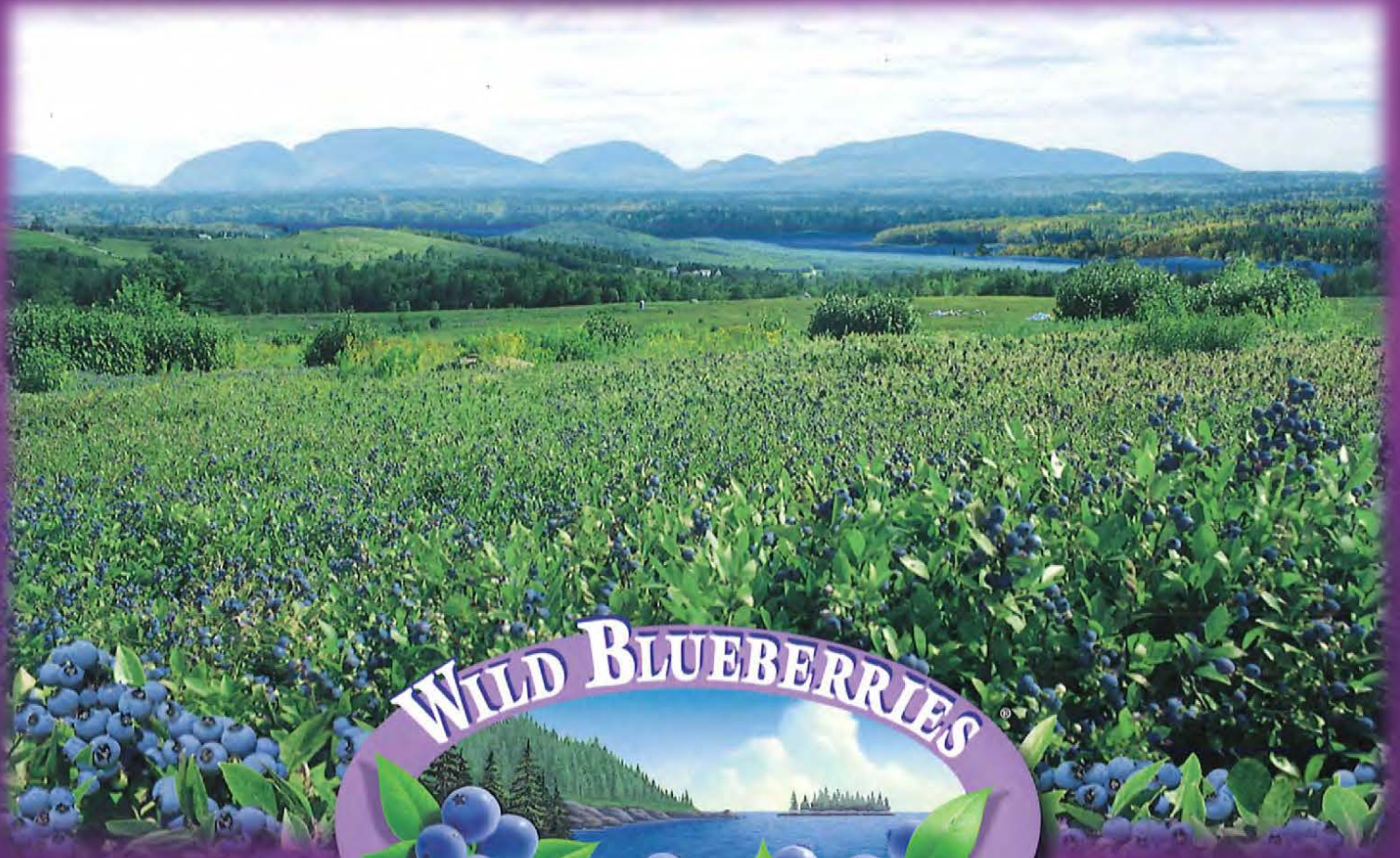
NUMBER ONE

In Taste



For great taste and the most antioxidant power, there's no better choice than irresistibly delicious Wild Blueberries. Simply put, Wild Blueberries are Nature's *tastiest* antioxidant.

NATURE'S #1 ANTIOXIDANT FRUIT™



The Wild
Advantage



The Best Blueberries On Earth™



It's the air. It's the ocean. It's the northern nights and sunny days. It's the soil. It's the rain. It's simply Nature's way of producing the best blueberries on earth:

Wild Blueberries from Maine, Atlantic Canada and Quebec. One of only

three berries native to North America, the Wild Blueberry thrives in the glacial soils and northern climate found in the special place we call the Land of Wild Blueberries.

The Power of Blue. Rich in natural "blue" antioxidants, Wild Blueberries have grown naturally

for thousands of years.

As Nature's #1 Antioxidant Fruit™, Wild Blueberries have more of the antioxidant power that may help fight cancer, heart disease and the effects of aging.

Tradition and Technology. Today, Wild Blueberries are often harvested the traditional way, with hand-held berry rakes that have been used for generations. Within hours of being picked, the berries are

sorted, cleaned and processed, using state-of-the-art technology to preserve their remarkable flavor, quality and antioxidant goodness.



The Wild Advantage

Wild Blueberries are distinct from cultivated blueberries in many important ways. We call these distinctions *The Wild Advantage*. They include extraordinary taste, special smaller size, superior performance, and highly marketable “wild mystique” — and they all add up to a big advantage for Wild Blueberry users.



Extraordinary Taste. The unique mixture of tangy, sweet Wild Blueberry varieties delivers a delicious burst of flavor from Mother Nature you just can't find anywhere else. This means your Wild Blueberry products will have more of the great taste your customers love.

Special Size. Naturally smaller and more compact, Wild Blueberries deliver more berries per pound —



up to three times more berries than cultivated. Your products will show more of the blueberries consumers are looking for, with more Wild Blueberry taste in every bite.



Superior Performance. Wild Blueberries hold their shape, texture, and deep blue color through a variety of manufacturing processes. The berries freeze extraordinarily well. In fact, individually quick frozen (IQF) Wild Blueberries maintain their quality for up to two years and can be used frozen in food preparation for easy handling. In any form, easy-to-use Wild Blueberries always perform beautifully.

Marketable Mystique.

By nature, Wild Blueberries have a “wild mystique” all their own — a northern, native and naturally appealing “wild imagery” that powerfully distinguishes Wild Blueberry products from all others. Simply put, Wild Blueberries are a proven way to bring added value and excitement to your product line.





WILD BLUE *Magic*



How *The Wild Advantage* Delivers Wild Blue Magic.

With all of its natural advantages — extraordinary taste, special size, superior performance and marketable mystique — it's no wonder Wild Blueberries add something very special to food and beverage products. Only Wild Blueberries have Wild Blue Magic: the power to make your

products irresistibly delicious, magically appealing!

Bakeries Create Magic.

Bakers have long known the secret of Wild Blueberries: the naturally smaller berries hold their shape, color and appetizing flavor during the baking process.

Available year-round, Wild Blueberries will give your muffins, pies, cakes, bagels and more the look and taste your customers prefer.





Manufacturers Package The Wild Mystique.

Leading food manufacturers worldwide are fast discovering *The Wild Advantage* of using Wild Blueberries in their products — and in their product names. The magical appeal of Wild Blueberries will add value to everything from cereal to ice cream.



Supermarkets Stock Wild Blueberries Year-Round.



Major food shopping outlets stock premium Wild Blueberries year-round in a variety of convenient consumer packages and product forms. Stock them frozen, canned, jarred, dried and fresh, so customers can bring the irresistible flavor of summer to the table in every season.

Restaurants Serve Wild Blue Magic.

From fast food to white tablecloth, when you menu Wild Blueberries, you're serving up Wild Blue Magic! Menu favorites take on added distinction when you use Wild Blueberries; and there's no easier way to create exciting, signature dishes with magical appeal. Delicious Wild Blueberries are easy to handle and lend themselves beautifully to a wide range of offerings.

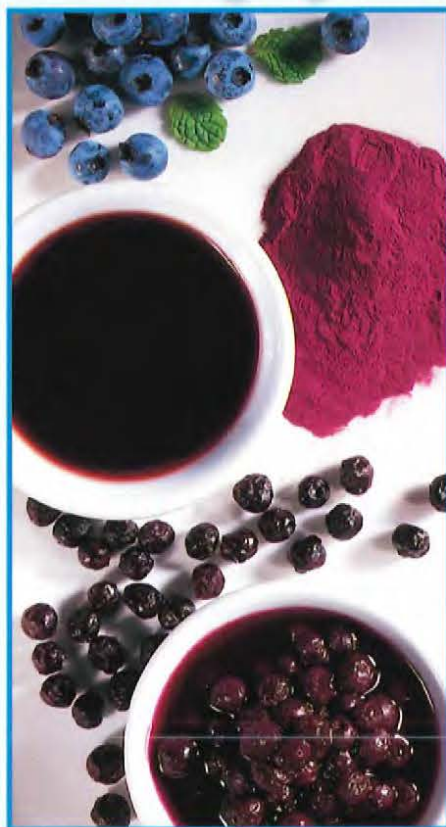


The Magic Of The Wild Ones.



Unique, lively and irresistibly delicious, Wild Blueberries are creating a sensation in the food world! The Wild Ones will liven up your product line, adding excitement and a distinctive personality to foods and beverages of all kinds. So always feature "Wild Blueberries" in your product name and make the most of *The Wild Advantage*.

Wild Forms Perform



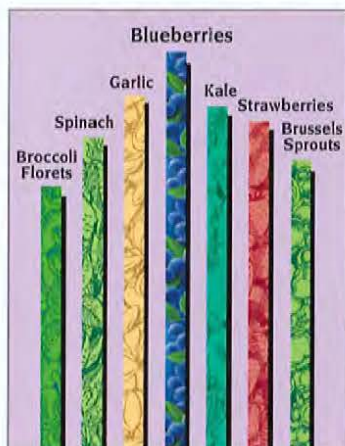
Form	Trade Pack	Consumer Pack	Availability
Individually Quick Frozen (IQF)	🍷	🍷	Year-Round
Dried/Dehydrated/Sugar-infused	🍷	🍷	Year-Round
Canned	🍷	🍷	Year-Round
Glass Jars		🍷	Year-Round
Concentrate	🍷		Year-Round
Purée	🍷		Year-Round
Powder	🍷		Year-Round
Extruded	🍷	🍷	Year-Round
Fresh	🍷	🍷	August to September
Frozen Fresh	🍷	🍷	Year-Round

Highly versatile Wild Blueberries are the answer to today's most challenging product development needs. Available year-round, the berries can be purchased in a wide variety of forms in sizes convenient to both the trade and consumer. In every form, Wild Blueberries perform beautifully, maintaining their taste, texture, shape and color throughout the manufacturing process. Frozen, dried, sugar-infused, concentrate or in any form that meets your needs, Wild Blueberries will add value and magical appeal to your current product line — and inspire exciting new product ideas as well. Create Wild Blue Magic with the forms that work for you!



Nature's #1 Antioxidant Fruit™

Rich in anthocyanin, a natural "blue" antioxidant, Wild Blueberries are exciting news for health-conscious consumers. Recent USDA ORAC[†] studies show that blueberries are number one in antioxidant activity compared with 40 other fruits and vegetables.* Wild Blueberries



*In recent USDA studies using ORAC measurements, blueberries ranked #1 in antioxidant activity compared with 40 other fruits and vegetables.

measure higher in ORAC than cultivated blueberries and also have more antioxidant compounds such as anthocyanin and other phenolics. In short, Wild Blueberries may be powerful allies in the fight against cancer, heart disease and the effects of aging.

The Anti-Aging Power of Blue. Scientists conducting animal studies at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University have found that a diet of blueberries may improve motor skills and actually reverse the short-term memory loss that comes with aging. Although other fruits and vegetables were studied, only blueberries were effective in improving motor skills.

More Benefits of Blue.

- **Urinary Tract Health.** Scientists have shown that blueberries, like cranberries, contain compounds that may help prevent urinary tract infections.
- **Cancer Prevention.** New research indicates that compounds in Wild Blueberries may inhibit both the initiation and promotion stages of cancer.
- **Vision Health.** Around the world, research has linked blueberry anthocyanin with improved vision and the prevention of tired eyes.

Nutrition Facts

Serving Size 1 Cup (140g)

Amount Per Serving	
Calories 80	Calories from fat 0
% Daily Value	
Total Fat 0 g	0%
Saturated Fat 0 g	
Polyunsaturated 0 g	
Monounsaturated 0 g	
Cholesterol 0 mg	0%
Sodium 0 mg	0%
Potassium 85 mg	2%
Total Carbohydrate 18 g	6%
Dietary Fiber 4 g	17%
Sugars 13 g	
Protein less than 1 g	

A good source of Vitamin C and dietary fiber, Wild Blueberries are also rich in phytonutrients – natural plant compounds – which nutritionists believe play a major role in the health benefits of fruits and vegetables.



Winning With WBANA

Add Value with Wild. When you use The Best Blueberries on Earth™, you add value to your product and your product marketing. The Wild Blueberry Association of North America (WBANA) works together with the food trade to bring the benefits of Wild Blueberries to worldwide markets through co-branding, promotion and strategic alliances of all kinds. Let us help you with point-of-sale materials, labeling and packaging programs, recipe and product development, and more.

The Mark of Distinction. It pays to tell your customers you're using Wild Blueberries by putting the words



"Wild Blueberry" into your

product name and putting our certification mark on your package.

Contact WBANA to learn how you can license the certification mark.

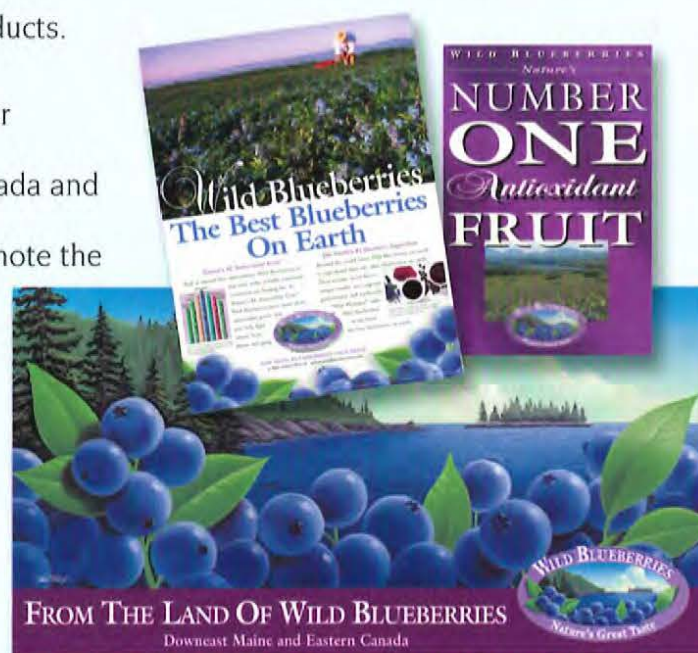
We'll help you add value, excitement and "marketable mystique" to your Wild Blueberry products.

A Winning Partnership. WBANA is your promotion link to Wild Blueberries from Maine, Atlantic Canada and Quebec. We're here, working in partnership with you, to promote the great taste and health benefits of Wild Blueberries to your customers around the world. Contact us today by phone, fax, mail or e-mail — and win with WBANA.

1-800-Add-Wild www.wildblueberries.com



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Tel: 1-800-Add-Wild or 1-207-288-2655 Fax: 1-207-288-2656 E-mail: inquiries@wildblueberries.com
51 Teakwood Court, Truro, Nova Scotia B2N 6H1 Canada www.wildblueberries.com
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NOT JUST BLUEBERRIES...

Wild BLUEBERRIES™



Frozen, dried, powder, extract or concentrate, Wild Blueberries are the perfect ingredient choice for exciting new product ideas.

NATURE'S #1 ANTIOXIDANT FRUIT™

According to recent USDA studies, Wild Blueberries are highest in antioxidant capacity per serving, compared with more than 20 other fruits¹—higher than a serving of cranberries, strawberries, prunes, raspberries and even cultivated blueberries. It's just what today's consumers are looking for to fight cancer, heart disease and aging.

Remember...**NOT JUST BLUEBERRIES,**
WILD BLUEBERRIES™



www.wildblueberries.com

THE #1 FRUIT INGREDIENT CHOICE

For powerful new product ideas, choose Wild Blueberries: the ingredient with extraordinary taste, superior performance, a unique small size and outstanding marketing appeal. Wild Blueberries have all the advantages plus potential anti-aging benefits that have scientists and health-conscious consumers buzzing.



Compared with 20 other fruits, Wild Blueberries rank #1 in USDA studies measuring antioxidant capacity (ORAC) per serving.¹

¹ Journal of Agricultural and Food Chemistry, 2004, 52: 4026-4037

INTRODUCING
FROZEN *WILD* BLUEBERRIES

THE BREAKFAST BERRIES™

Get A Healthy Start With Nature's #1 Antioxidant Fruit™

Wake up to Wild Blueberries—now part of a quick, healthy and delicious breakfast. Easy-to-use Frozen Wild Blueberries deliver the highest antioxidant capacity per serving compared with more than 20 other fruits, including cultivated blueberries.* Just

½ cup satisfies one of your recommended

5 A Day servings of colorful fruits

and vegetables.

So remember,
start every day
with the

Wild Ones—not just blueberries,
Wild Blueberries. Look for them
year-round in your supermarket freezer.



**Not Just Blueberries
Wild Blueberries™**

* Journal of Agricultural and Food Chemistry,
2004, 52:4026-4037

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www.wildblueberries.com

GET YOUR DAILY DOSE OF BLUE.TM

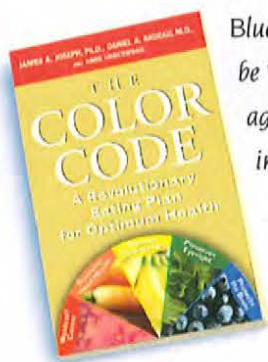
"For optimum health, scientists say, eat a rainbow of colors."

— TIME, 2002 Annual Health Issue¹

BLUE – it's the latest word in healthy eating. And the best way to get BLUE is **Wild Blueberries**, the little ones with great big taste. Just a half-cup of Wild Blueberries satisfies one of your recommended **5 A Day** servings of fruits and vegetables. Plus, the USDA ranks them #1 in antioxidant activity.²

Think Health. Think Blue!

The more colorful your 5 A Day choices, the more protection you may have against cancer, heart disease and aging. That's why deep-blue Wild Blueberries – packed with phytochemicals – are anti-aging superstars. Ask your grocer for easy and convenient **Frozen Wild Blueberries**, available in supermarkets year-round!



Blueberries may be "one of the best age-proofing foods in your diet," according to **"The Color Code,"** in bookstores now.



THE POWER OF BLUE EVERY DAY!

For more on the benefits of blue, visit www.wildblueberries.com

¹ TIME, January 21, 2002

² Source: *Journal of Agricultural and Food Chemistry* 44:701-705; 3426-3431, 1996; 46:2686-2693, 1998.
© 2002 Wild Blueberry Association of North America

WILD BLUEBERRIES



Welcome to the Land of Wild Blueberries

In the beautiful coastal fields and barrens of Downeast Maine, Wild Blueberries have grown naturally for thousands of years. These irresistibly delicious, good-for-you Wild Blueberries are a symbol of Maine's agricultural heritage—a heritage that values and respects our environment. Look for fresh Wild Blueberries during harvest time, or frozen Wild Blueberries year-round in your grocer's freezer.



www.wildblueberries.com

DISCOVER The POWER of Blue™

Wild Blueberries may be small, but studies show they may have big powers of protection. Rich in natural, "blue" antioxidants, Wild Blueberries have more of what your body may need to fight cancer, heart disease, Alzheimer's disease, urinary tract infections and the effects of aging.

GET YOUR DAILY DOSE OF BLUE™

Just a half cup of Wild Blueberries satisfies one of your recommended 5 A Day servings of colorful fruits and



vegetables. It's so easy to add Wild Blueberries,

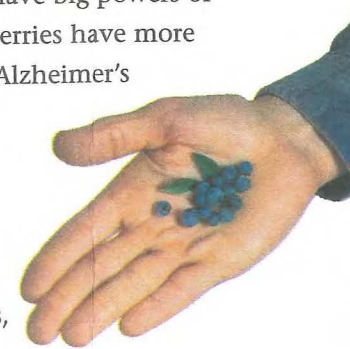
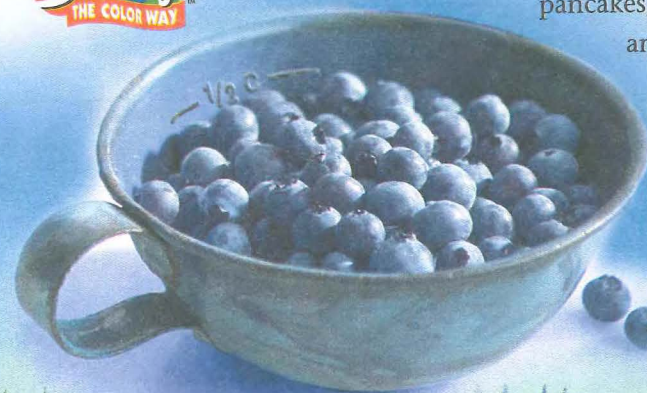
fresh or frozen, to cereal, yogurt, salads,

pancakes, muffins, smoothies

and more. It's a delicious

way to get your

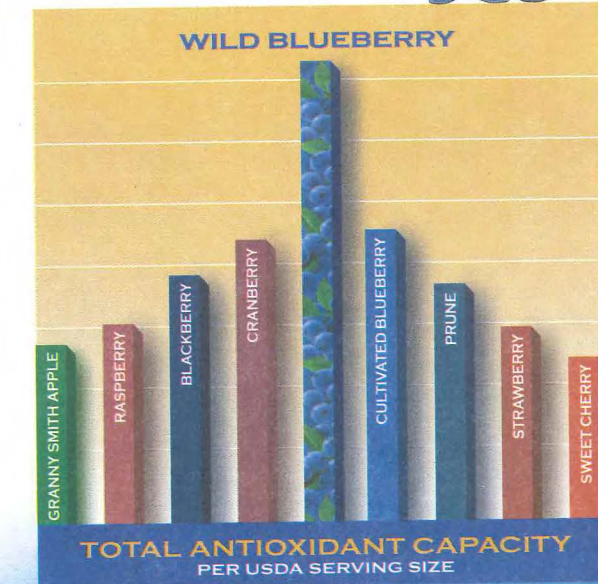
Daily Dose of Blue.™



Nature's #1 Antioxidant Fruit™

Wild Blueberries are a tasty way to eat right!

In USDA studies,* Wild Blueberries ranked #1 in antioxidant activity compared with more than 20 other fruits. This makes them powerful allies in the quest for good health.



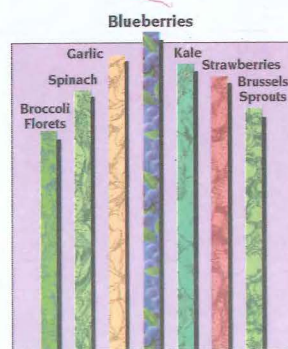
Wild Blueberries rank #1 in USDA studies measuring the antioxidant activity of more than 20 other fruits.*

* Journal of Agricultural and Food Chemistry, 2004, 52:4026-4037

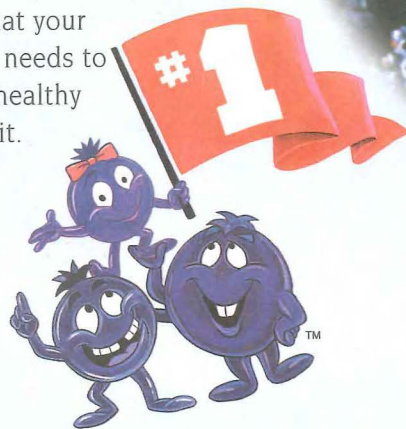


In the beautiful fields and barrens of Maine, Atlantic Canada and Quebec, Wild Blueberries have grown naturally for thousands of years. You can find these tangy, sweet little berries in restaurants, farm stands and supermarkets throughout the special place we call The Land of Wild Blueberries.

Getting your **Daily Dose of Blue™** is easy. Just a half cup of Wild Blueberries deliciously satisfies one of your recommended 5 A Day servings of colorful fruits and vegetables.



The USDA ranks blueberries #1 in antioxidant activity¹ compared with other fruits and vegetables. That means Wild Blueberries have more of what your body needs to stay healthy and fit.



¹Source: *Journal of Agricultural and Food Chemistry*, 44:701-705; 3426-3431, 1996; 46:2686-2693, 1998. The Nature's Great Taste Logo is a registered mark of the Wild Blueberry Association of North America. Wild Blueberry Characters TM & © 1997 Wild Blueberry Association of North America



WELCOME TO THE LAND OF Wild Blueberries



Put the **Power of Blue™** to work for you. Look for Wild Blueberry items on the menu or add them to salads, smoothies, muffins, pancakes and cereals — and enjoy the healthy goodness of Wild Blueberries every day.



www.wildblueberries.com

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Welcome To The Land Of Wild Blueberries!



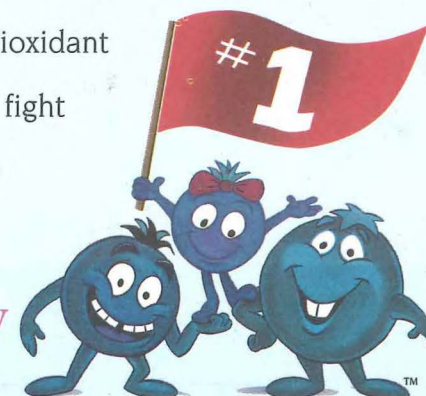
Ask for the Wild Blueberry items on the menu
and discover Nature's Great Taste!

Wild Blueberries have grown naturally in Maine and eastern Canada for thousands of years. In fact, long before European settlers came to the New World, Native North Americans had already discovered many uses for the remarkable, irresistibly delicious Wild Blueberry.

Today, you'll find Wild Blueberries in all kinds of menu favorites, from pies and pancakes to muffins and bagels.

Nature's #1 Antioxidant Fruit!

Recent USDA studies ranked blueberries number one in antioxidant activity when compared with 40 other fruits and vegetables.* That means Wild Blueberries have more of the antioxidant power that may help fight cancer, heart disease and aging.



The Tastiest Way To Get Your Antioxidants

For antioxidant power and great taste, there's no better choice than a daily serving of Nature's tastiest blueberries: Wild Blueberries. Look for easy-to-use, frozen Wild Blueberries in your super-market year-round.

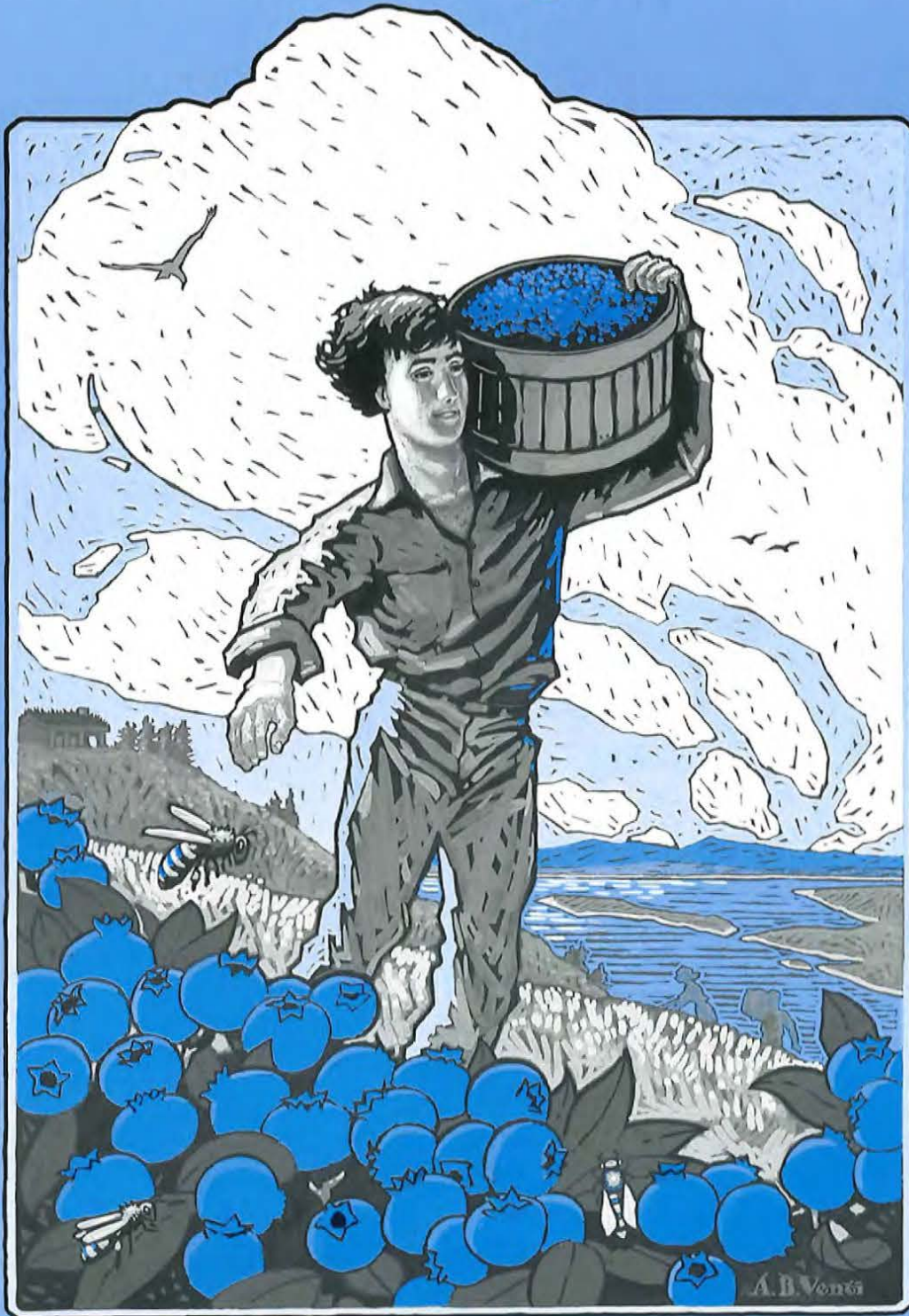


www.wildblueberries.com

*Source: Journal of Agricultural and Food Chemistry, 44:701-705; 3426-3431, 1996; 46:2686-2693, 1998
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MAINE WILD BLUEBERRIES

America's Native Berry



THE WILD BLUEBERRY CLASSROOM CURRICULUM

WILD BLUEBERRY TABLE OF CONTENTS

WILD BLUEBERRY POETRY

1 - 4

ADVERTISING WILD BLUEBERRIES

5 - 10

Food Advertising Tally Sheet

9

Letter to Parent or Guardian

10

PRODUCING WILD BLUEBERRIES

11 - 22

Producing Wild Blueberries – A Two-Year Cycle

17 - 18

Life Cycle

19 - 20

Life Cycle Answer Key

21

ANIMALS AND WILD BLUEBERRIES

23 - 36

Sample Flowchart

30 - 31

Flowchart Symbols

32

Bubblegram

33 - 34

Bubblegram Answer Key

35

HEALTH AND NUTRITION - WILD BLUEBERRY STYLE

37 - 44

Wild Blueberry Recipes

39

Food Guide Pyramid for Young Children

40

Food Guide Pyramid

41

Nutritional Information

42

Reading Nutritional Labels

43

Reading Nutritional Labels Answer Key

44

WILD BLUEBERRY HISTORY AND GEOGRAPHY

45 - 52

Map of Maine

49

Map of Wild Blueberry Regions

50

Mapping Answer Keys

51

WILD BLUEBERRY MATH

53 - 62

Wild Blueberry Production Decisions

57

Wild Blueberry Production Decisions Answer Key

58

Annual Blueberry Crop

59

Annual Blueberry Crop Answer Key

60

Wild Blueberry Production

61

Wild Blueberry Production Answer Key

62

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— Wild Blueberry Commission of Maine

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WILD BLUEBERRY POETRY



Blueberry barrens

BRIEF DESCRIPTION

The students will explore poetry and art using the wild blueberry as the object of their efforts. They will write and illustrate a poem using descriptive language and read their poems to the class.

STATE OF MAINE LEARNING RESULTS

Subject	Section	Grades 3-4	Grades 5-8
English Language Arts	E	2, 3	2
	F	1	1
	G	1, 4	3, 5, 7, 8, 9
Visual and Performing Arts	A	4	4
Science and Technology	A	3	

OBJECTIVES:

The students will:

1. write a poem about wild blueberries using one or more forms of poetry.
2. edit and compile the poems into a book or newspaper.
3. Illustrate their poetry (and/or book) using an art technique or medium of their choice.

LIFE SKILLS:

Describing, developing appreciation, developing vocabulary, editing, expressing one's self, illustration (or other art forms), observing, writing

MATERIALS:

- Writing materials and paper
- Art supplies

ESTIMATED TEACHING TIME:

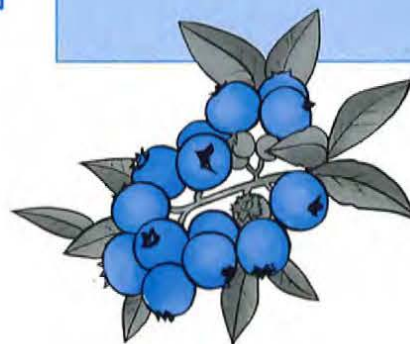
Two or three 45-minute class periods

PREPARATION:

Insure that the poster accompanying this educator kit is displayed where students can see it.

VOCABULARY:

Cinquain, Haiku, Acrostic (Other vocabulary words will develop as the students write.)



BACKGROUND



The wild blueberry has been part of Maine's history, culture and economy for centuries. The wild blueberry was an essential part of the Native American diet and culture long before settlers came to Maine. It was eaten fresh in the summer, dried for use in the winter as a seasoning for stews and soups, and

used for curing meats. The crushed wild blueberry was made into dyes. It was also used in medicine. Brewed as a pungent tea, it was given to relieve pain. Blueberry juice and syrup were used as cough medicine. It was and is a part of Native American legends and is believed to have magical powers. Atop each wild blueberry is a five-pointed star that is the base of its earlier flower calyx. Legend has it that during a time of starvation, the Great Spirit sent these "star berries" down from the heavens to relieve the hunger of his children.

When settlers arrived, the Native Americans showed them the wild blueberry barrens that had been cared for by burning on a regular basis and taught the many uses of the wild blueberry. Colonists in 17th century New England created foods called Grunt, Slump, Mush, Buckle, and Fool made from wild blueberries. During wild blueberry season, one of these dishes usually graced the supper table.

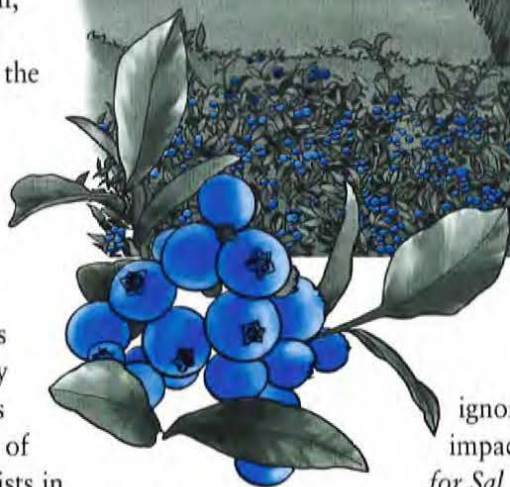
The importance of the wild blueberry to Maine's economy is still in effect today. It affects not only the economy, but also our culture and diet. One such example can be found in Robert Frost's poem, "Blueberries," published in 1914 by Holt and Company in North Boston. It begins like this:

*You ought to have seen what I saw on my way
To the village, through Patterson's pasture today:
Blueberries as big as the end of your thumb,
Real sky-blue, and heavy, and ready to drum
In the cavernous pail of the first one to come!...*

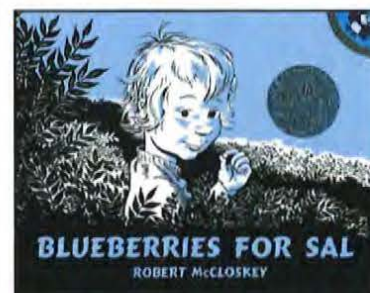
Or in Pauline W. Moore's *Blueberries and Pulsey Weed: The Story of Lovell, Maine*:

*When 'Went A-Blueberrying' was
recorded it was really summer.
Blueberries were plentiful,
especially where the land had
been burned over...*

*If it had been an
extremely dry summer,
the berry pickers had
to watch out for bears
that stood up on their
hind legs and reached
for the big ones just
as the humans did.
Many bears have been
seen by blueberry
pickers but never has
anyone been hurt.
Both the bears and
humans run as fast as
possible, the only
difference being that
the human drops a
basket full of his best berries.*



Nor can we ignore the unforgettable impact that *Blueberries for Sal* has had on young children across the United States. In the classic story, a young girl in Maine wanders away from her mother while blueberry picking to come face-to-face with a mother black bear whose cub has also wandered away to come face-to-face with Sal's mother.



From *BLUEBERRIES FOR SAL* by Robert McCloskey, copyright 1948, renewed (c) 1976 by Robert McCloskey. Used by permission of Viking Penguin, an imprint of Penguin Putnam Books for Young Readers, a division of Penguin Putnam Inc.

Poetry is also a part of our culture. It has allowed us to paint word pictures to express thoughts and feelings about our experiences. There are many forms of poetry. Three of these are Haiku, Cinquain, and Acrostic.

HAIKU

Haiku is a Japanese poetry form that always has three lines that do not rhyme. The first line always has five syllables. The second line always has seven syllables. And the third line always has five syllables. It is usually written about nature or the seasons.

Example:

Line 1, 5 syllables – Blueberry picker
 Line 2, 7 syllables – raking blueberry barrens
 Line 3, 5 syllables – summertime in Maine

CINQUAIN

The Cinquain is a five-line poem that is based on the number of words or syllables. Each line has a theme and a given number of words or syllables.

Line one: a title written in two words or syllables
 Line two: a description of the title in four words or syllables
 Line three: a description of action in six words or syllables
 Line four: a description of a feeling in eight words or syllables
 Line five: another word for the title in two words or syllables

Example:

Wild Blueberry.
 Sky-blue, round, sweet.
 Raking on the barrens.
 Sweet happiness in round, blue balls.
 Wild joy!

ACROSTIC

Acrostic poetry uses a word written down the left side of the page. Using the letter of the word as the first letter of another word or phrase a poem is written.

W onderful
 I nspired
 L ovely
 D elights

B lue
 L ights
 U plifting
 E very
 B erry
 E very
 R ipe
 R eady
 Y ear



ACTIVITY

1. Display both the poster and the folder that contains this kit. Ask students to brainstorm and write a list of words that describe these images. Use both the inside and outside of the folder.
2. Select one or more of the poetry types for the students to utilize and have each write their own poem using words that have been developed in the brainstorming session.
3. Have the students edit their poems and reproduce a final copy onto a large sheet of construction paper. Have the students select a medium and illustrate their poems.
4. Have the students read and display their poems, then post their works or have the class compile them into a book.



EXTENSIONS

1. In conjunction with the other lessons in this educator kit, have the students each compile their own wild blueberry book that contains poetry, artwork, an advertisement, the life cycle description and sequence, etc.
2. Create a wild blueberry newspaper and have the students compile efforts from these lessons into sections of the newspaper.
3. Have the students research other instances where wild blueberries are used in literature, poetry, the press, etc.
4. Have older students write longer poems and turn them into song lyrics, create a rap song or write a free verse.

EVALUATION

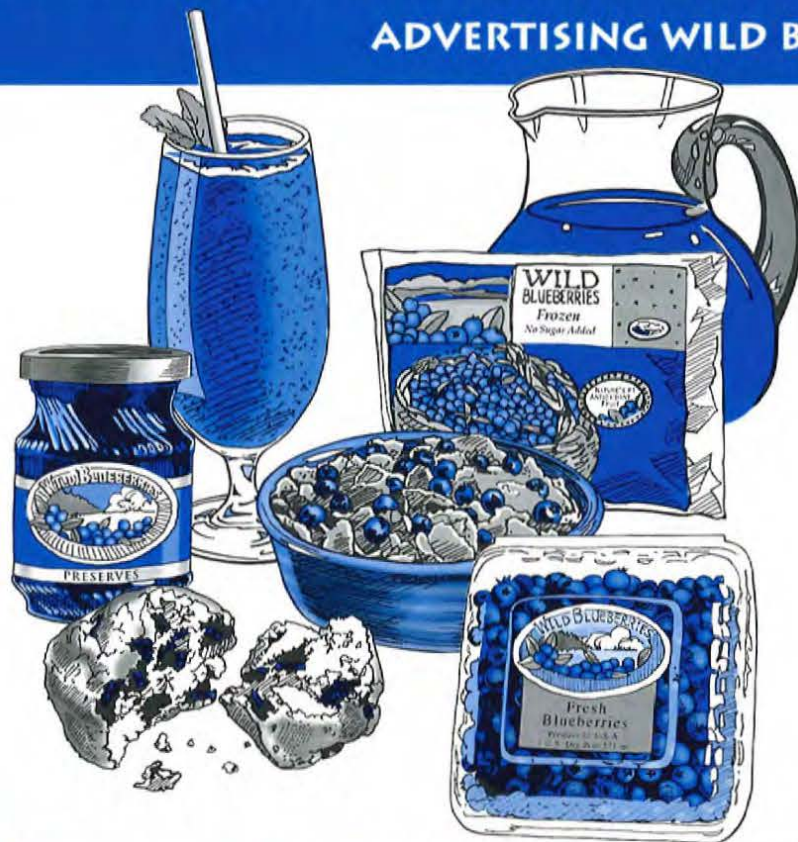
1. Evaluate the poetry and accompanying artwork as they relate to the style chosen.
2. As an evaluation tool, assign the students to develop a greeting card that contains a poem and is illustrated. Include these in a portfolio.

RESOURCES

1. McCloskey, Robert. *Blueberries for Sal*. New York: Penguin Putnam Books for Young Readers, 1976.
2. Lathem, Edward Connery ed., *The Poetry of Robert Frost*. New York: Holt, Rinehart and Winston, 1964.
3. Moore, Pauline Winchell. *Blueberries and Pusley Weed: The Story of Lovell, Maine*. Kennebunk, Maine: Star Press, Inc., 1972.

NOTES:

ADVERTISING WILD BLUEBERRIES



BRIEF DESCRIPTION

Students will explore the role of advertising in influencing consumer choices. Students will then utilize methods employing language and visual arts to develop their own advertisements and/or commercials to promote the sale of Maine's wild blueberries.

STATE OF MAINE LEARNING RESULTS

Subject	Section	Grades 3-4	Grades 5-8
English Language Arts	A	3	2, 3
	C	3	2, 5
	D	5	
	G	1, 4, 7	3, 7, 8, 9, 10
	H	4	6
Health and Physical Education	B	1	1, 2
Science and Technology	K	2, 5	4
	L	6	
Social Studies – Economics	A	2	2, 3
Visual and Performing Arts	A	4	2, 7
	B		4, 6
	C	1, 7	4

OBJECTIVES:

The students will:

1. identify advertisements and commercials that are used to market food products.
2. review those advertisements and commercials to identify the components that influence consumer choices.
3. develop their own advertisements and/or commercials to market Maine's wild blueberries.
4. describe the influence of advertising on their own food choices.

LIFE SKILLS:

Critical thinking, decision-making, vocabulary development, assessment, persuasion

MATERIALS:

- Advertisements from newspapers and magazines
- A selection of publications aimed at the students' demographic group
- A selection of videotaped commercials
- Paper and art supplies
- Camcorder and videotapes

ESTIMATED TEACHING TIME:

Teacher preparation time, one week in advance of teaching the lesson; two 45-minute to one-hour class periods plus time for student research and creativity

PREPARATION:

- If needed, send letters home to parents alerting them to the homework assignment that involves tallying television commercials (see example).
- Videotape a series of commercials that influence consumer choices when buying food.
- Save, or have the students save, advertisements from newspapers and magazines.
- Examine publications aimed at the age group of the class and select several ads that target this age group specifically, that may be different from adult ads.
- Decide if this lesson should be conducted in conjunction with the activity in the Health and Nutrition lesson that instructs students to create a new wild blueberry product.

VOCABULARY:

Advertisements, commercials, persuade, influence, target group

BACKGROUND

As current and future consumers, students should be aware of the influences that affect their desire to purchase products, consume certain foods, or wear a type of clothing. Students may one day grow up to operate businesses that need to market products and services or be employed by businesses that promote the sale of goods and services.

Once products are produced, businesses must convince consumers to purchase those goods or services. One way to interest consumers in a product is to advertise it. Millions of dollars are spent annually to convince consumers to purchase products.



The techniques used have become very sophisticated since the early days of advertising. Music, art, language, and economics all play a role in efforts to convince consumers to shop at a certain store, purchase a certain product, or eat at a certain restaurant. Efforts underway to educate students to make healthy choices may be affected by the barrage of advertising they receive. This lesson will encourage students to examine the ways in which they are influenced to make these decisions, how to distinguish fact from opinion, how advertising affects their eating habits, and the role that music and graphic arts play in influencing their decisions.

INTRODUCTION



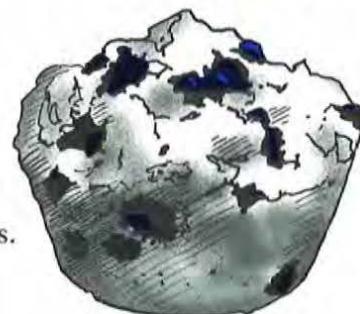
1. Ask students what influence they believe advertising has upon them. Let them discuss their opinions. Have they ever bought a product just because of an ad, commercial, or contest? Explain that this lesson will show them how advertising affects consumers' decision-making and give them an opportunity to employ techniques that they identify.

2. Have the students watch commercials on television for one week and complete the *Food Advertising Tally Sheet*. (Use the letter to parents, if needed, by copying it onto school letterhead or create your own version. This may also be structured as a family activity by sending home several copies of the tally and asking the parents to complete the tally as well as their child and discuss the differences as a family. It can be educational to learn the differences in types of products advertised at the various viewing periods – daytime, prime time, Saturday morning, sporting events, etc.)

3. While the students complete their tallies, have them bring to class advertisements from printed media such as newspapers and magazines. Ask them to specifically select food ads.

4. Print off some advertisements from the Internet that include contests that offer prizes while connecting the viewer to another site that is a commercial site. Or have students access such sites in class and identify the techniques that are being used to interest them in the products being promoted.

5. Videotape a series of food commercials that influence consumer choices. Make sure that there are some that influence the consumer with music (a snappy song that repeats in one's head), visual appeal that makes the consumer crave a food (cake with gooey frosting), contests, name brand recognition, humor, promise of success, and a commercial that convinces a consumer to buy products on sale.



ACTIVITY ONE

1. As the students complete their tally, ask them to identify a food commercial that they like or feel is very effective: one that makes them want to buy the product.



2. Ask them to watch that commercial carefully and list the things about it that make it effective. Ask the students:

*Does it have a song or jingle? What is it?
Can you sing along with it?*

Does it show the food? What makes you like it? Do you want to eat the food? Why?

Does it show people eating? Are they enjoying what they are eating? How can you tell? What do the people look like? Are they your age? Are they mixed ages? Does everyone look healthy?

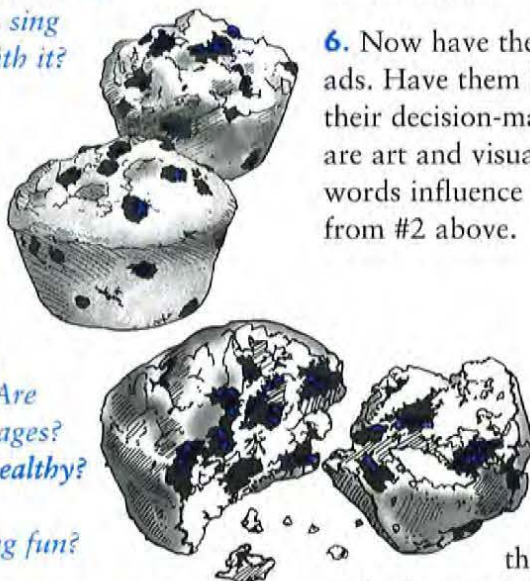
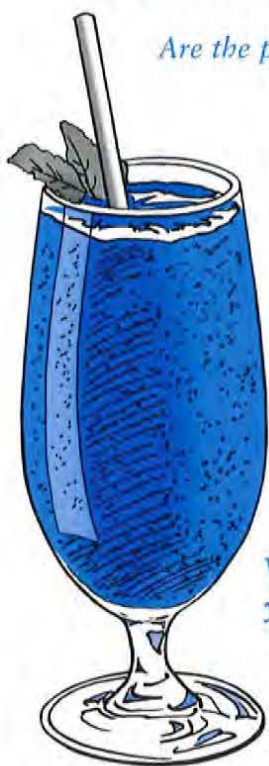
Are the people having fun?

*What colors are used?
Do you like those colors?*

What language is used? Are there any words that stand out? Do the words paint images in your head?

How does the commercial make you feel? Does it remind you of anything?

What will be the effect on you if you buy this product?



c. divide the foods into healthy choices or unhealthy choices and make a graph of the results. Discuss the students' findings and the factors that influence them to buy products.

4. Show the video clips of commercials that you feel are very effective in the categories indicated and discuss what makes each commercial effective.

5. Compare the advertisement tallies with the recommendations of the Food Guide Pyramid (See p. 39). Ask if these are in alignment. Discuss the impact that advertising has on the students' personal food choices.

6. Now have the students examine print and Internet ads. Have them identify the factors that influence their decision-making. How is language used? How are art and visual images used? What is fact? What words influence them? Ask the questions that pertain from #2 above.

ACTIVITY TWO

1. Decide if the students will create a print ad, commercial or both. If commercials are to be produced, it is recommended that a small group be used to develop each commercial. Each student or group needs to decide what food the ads will promote that contains Maine wild blueberries (muffins, pies, ice cream, jam, etc.) or create their own unique food that contains Maine wild blueberries.

2. Instruct the students that they will now create their own advertisements (or commercials) to promote a very healthy food—Maine wild blueberries. If they are making a print ad, they will need a slogan and visual theme. If a videotaped commercial is to be produced, they should first create a script with directions or a storyboard that outlines how the taping will be done.

3. Work with the school cafeteria to display the ads during a time that Maine wild blueberries will be served and run the commercials on a TV.



- create a huge classroom tally,
- graph the results by category, or



EXTENSIONS

1. Create a large Food Guide Pyramid (a copy is included in the Health & Nutrition Wild Blueberry Style lesson on page 39) and tape the food ads to the appropriate category to determine whether the students are being encouraged to maintain a healthy diet. Discuss the results.
2. Examine the ads in a variety of publications targeted to different age ranges and interest areas to observe how advertising differs by population groups. Discuss the observations.
3. If the school cafeteria will work cooperatively with you on this project and plan to use Maine wild

blueberries in their menu, have students create “radio spots” to promote these foods when they are being sold in the cafeteria. Ask that these radio spots be included in the morning announcements over the public address system. Or, if the school is so equipped, use the videotaped commercials on closed circuit television in the school.

EVALUATION

1. Assess the thoroughness of completing the *Food Advertising Tally Sheet*.
2. Evaluate the finished advertisements or commercials.

NOTES:



NAME _____

FOOD ADVERTISING TALLY SHEET

Watch commercials on television for one week. Count each time a food commercial appears and add it to the tally for the category listed below.



For the Week of:	Total
Vegetables	
Fruits	
Snack Foods	
Candy	
Dessert Foods	
Meats	
Eggs	
Soft Drinks	
Fruit Juices	
Breads and Crackers	
Cereals	
Milk	
Dairy Products	
Other	



Date _____

Dear Parent or Guardian:

During the next week, our class will be conducting a survey of television commercials to identify the methods used to influence consumers. The purpose of this lesson is to begin to develop decision-making skills as consumers by educating ourselves about the influences that surround us. It is our intent for the students to realize how audiences are targeted, the type of products advertised, and the techniques that are used to encourage purchasing. After the tally is complete and we compile the results, we will discuss the food advertising, food choices students make and address making healthy food choices.

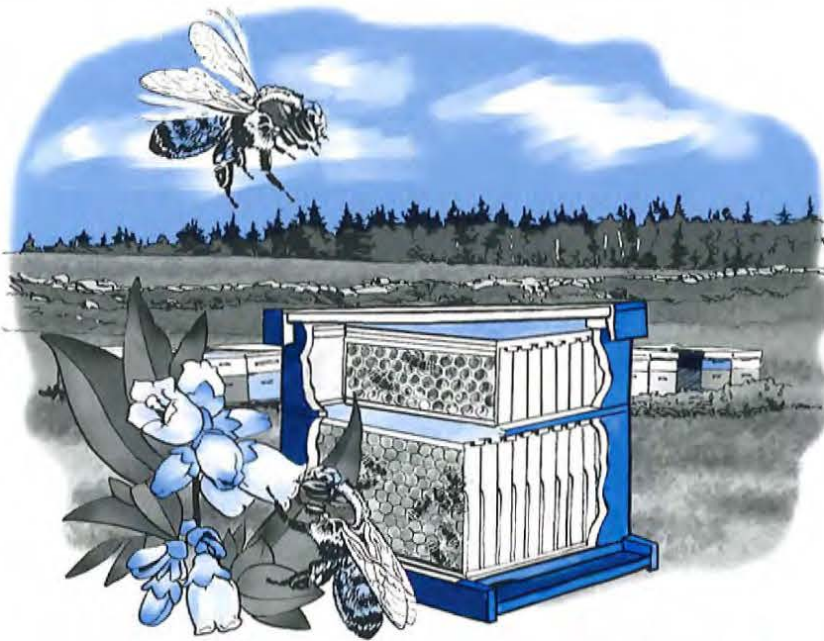
You may wish to make this a family activity by keeping your own tally, comparing products promoted during each viewing period and having a family discussion. There are significant differences between the products promoted during daytime, prime time, sporting events and Saturday morning cartoon viewing.

We are not asking students to increase their television watching but to keep a tally of commercials during their regular viewing time. If you would like your child to be exempted from this television tally, please indicate your wishes below and have your child return it by the end of the week.

Thank you for your assistance with this activity. We hope it helps your child to become a more informed consumer.

Sincerely,

PRODUCING WILD BLUEBERRIES



Bees are brought in to pollinate wild blueberry plants in bloom.

BRIEF DESCRIPTION

Students will explore the production of wild blueberries as it relates to their yearly life cycle, technology, and the food system. Students will then utilize methods employing language and visual arts to develop written and oral accounts of the production of Maine's wild blueberries.

STATE OF MAINE LEARNING RESULTS

Subject	Section	Grades 3-4	Grades 5-8
Science and Technology	A	3, 4	3
	B	1, 2, 3, 4	2
	L	4	
	M	1	2, 4
Career Preparation	A	3	
	C	1, 2	2
	D		1
English Language Arts	D	3, 4	5
	E	3, 4, 6	2
	G	1, 7	1, 6
Social Studies/Economics	C	1	
Mathematics	F	1	
	I	1	
Visual & Performing Arts	A	4	4

OBJECTIVES: The students will:

1. listen to an oral account or read about the yearly production of Maine's wild blueberries in *Producing Wild Blueberries – A Two Year Cycle* and sequence artwork to coincide with that life cycle/production cycle.
2. develop captions for the artwork using correct terminology.
3. write, in their own words, a description of the annual cycles to produce wild blueberries in Maine and the process that brings those wild blueberries to the consumer.
4. prepare a poster (using a variety of resources) and oral presentation of the wild blueberry production process.

LIFE SKILLS: Sequencing, developing vocabulary, understanding systems, understanding seasons, writing to explain or describe

MATERIALS:

- Copies of the wild blueberry artwork
- Poster board
- Art supplies including scissors and paste
- Pens/pencils and paper

ESTIMATED TEACHING TIME:

Two or three 45-minute to one-hour class periods

PREPARATION:

- Gather the necessary art supplies and poster board
- Make copies of the artwork

VOCABULARY: Acidic, clone, cross-pollination, highbush blueberries, Integrated Crop Management (ICM), Integrated Pest Management (IPM), irrigation, lowbush blueberries, pH, pruning, rakers, rhizome

BACKGROUND

The wild blueberry is one of only four commercially grown fruits that are native to North America. (Cranberries, concord grapes, and blackberries are the others.) The Native Americans were encouraging wild blueberry growth long before settlers came to Maine. Maine is the number one producer of blueberries (cultivated or wild) in the world. Maine produces 25 percent of all blueberries in North America and accounts for almost all wild blueberries commercially produced in the United States. Wild blueberries grow on 60,000 acres in Maine.

WILD BLUEBERRY CLASSIFICATION AND DESCRIPTIONS

Wild blueberry fields have been developed from native plants that grow naturally on the forest floor. All blueberries and cranberries are members of the Heath family, *Ericaceae*. Both blueberries and cranberries are in the genus *Vaccinium*. Maine has several species of wild blueberries. The species most common is *angustifolium*. Most of Maine's wild blueberries fall into the botanical classification of *Vaccinium angustifolium*. This species has smooth stems that can be colored tan to red; dark green, smooth leaves; white or pinkish-white, bell-shaped blossoms; and grows four to 15 inches high. Its fruit is usually dark blue, but the waxy coating on the fruit makes it appear powder blue. A variety of *angustifolium*, *nigrum*, has the same traits except for the fruit. There is no waxy coating on the fruit, the fruit is black in color, and it tends to be larger and sweeter than its more common cousin. Both of these are sweet varieties.

A less sweet type, *Vaccinium myrtilloides*, is commonly known as the sour top blueberry. Common in hilly or mountainous areas, its stems are more branched and covered with tiny hairs. It also grows taller, six to 24 inches high. There are other differences as well. The leaves are light green, hairy on the underside, and curl downward. Its blossoms are also bell-shaped but are greenish white or sometimes tinged with red. The berries are smaller and less sweet than the other species'. All of these species are known as lowbush blueberries.

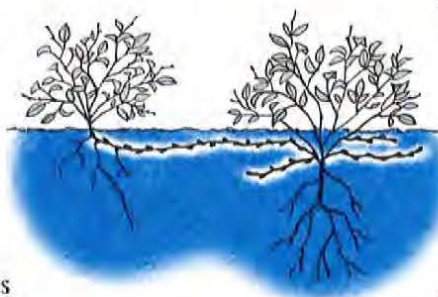
The last species, *Vaccinium corymbosum*, is known as a highbush blueberry. This species is more commonly found along lakes or ponds, but is sometimes found near managed wild blueberry fields.

LIFE CYCLE SYNOPSIS

The life cycle of the blueberry begins when the plants grow stems and leaves from underground rhizomes. In the summer and early fall, the plants set flower buds on the stems for the next year. Later in the fall the plants lose their leaves and go dormant for the winter. In the spring, growth resumes with new leaves and flowers. Once the flowers are pollinated by insects, they set fruit, the fruit grows and ripens, and the fruit is harvested. The plants are then pruned later in the fall or early next spring to begin the first-year cycle over again.

STARTING A WILD BLUEBERRY FIELD

Initially, many wild blueberry plants start naturally from seed. Once these plants are established, they send out underground stems known as rhizomes (horizontally spreading stems). Rhizomes grow near the surface of the



soil and send up new stems above the soil that begin a new plant. The rhizome also develops roots so the plant or clone can increase in size. These new stems are known as a clone because they are genetically identical to the parent plant from which the

rhizomes grew. A neighboring plant and its rhizomes are genetically different. One clone can cover from 75 to 250 square feet. An acre of wild blueberries (the size of a football field) may have 200 to 500 different clones.

While it is possible to develop new plants from seeds, rhizome cuttings, stem cuttings, sod cuttings and tissue culture, plants in commercial wild blueberry fields have been established naturally without human intervention.

THE CROPPING CYCLE

While wild blueberries will grow and fruit without human help, fields of wild blueberries are managed to increase production. At least one of these techniques was developed by Native Americans. Most wild blueberry fields are pruned to the ground every other year by burning or mowing. Burning (first practiced by Native Americans) reduces certain insects and diseases but also burns organic matter in and on top of the soil. Mowing maintains the organic matter, but if the weather conditions are favorable, pest outbreaks may occur.

PLANT GROWTH

In the growing season after pruning, vegetative (leaves, stems, and rhizomes) and reproductive growth (flower bud development) occurs. A grower works to ensure the best crop possible by checking to see that the soil acidity is best for the wild blueberries, plants have the proper nutrition, plants are healthy, and that they have adequate water.

Soil Acidity – Wild blueberries developed in a wild northern climate in glacial soils that are acidic and are adapted to places where other plants have difficulty growing. Blueberries like soils that are acidic. Neutral soil has a pH of 7: lower than 7 it's acidic, and higher than 7 it's alkaline. The best soil pH for blueberries is 4.5. Soils are tested regularly, and if the pH needs to be lowered, sulfur is added.

ensures bud formation, which can prevent crop loss due to bud reduction in dry seasons. The use of irrigation in the crop year prevents loss of berry size due to drought. Irrigation is most important during years of drought. However, it is a very expensive undertaking for growers.

BLOOM AND POLLINATION

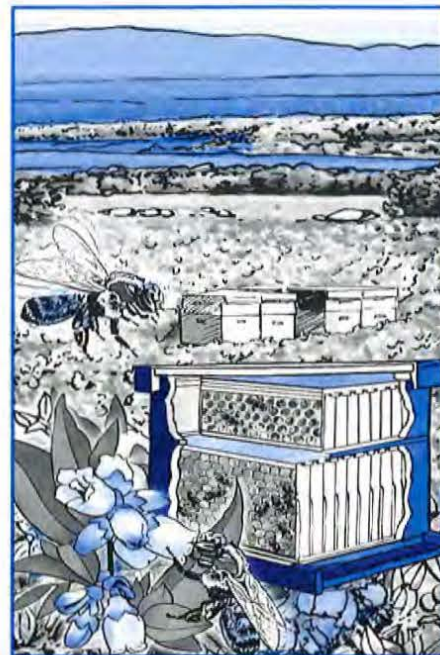
The year following the growing year, the plants flower in May. Bloom lasts two to four weeks. Blueberries need cross-pollination. This means that pollen from a plant cannot fertilize that same plant. Pollen from another plant is needed to fertilize and set fruit on a plant. Insects are needed for this cross-pollination to occur. Pollination by honeybees and other bees yields larger wild blueberry crops. There is more fruit set and wild blueberries are



Pruning by burning



Winter dormancy



Bloom/pollination

Fertilization – Growers use leaf tissue samples before a field is pruned to determine what type of fertilizer and the amount of that fertilizer a field needs for the plants to grow and produce well. Proper nutritional management of a crop means healthy plants, prevention of some plant health problems, and excellent blueberry yields. Proper nutritional management ensures that new fields will be established more rapidly, the plants will grow faster, and the fields will have a higher yield of blueberries.

Irrigation – Maine is blessed with adequate amounts of rainfall in most years, usually 45 inches per year. But since it does not always rain when needed, growers have begun to use irrigation to supplement rainfall. In the vegetative growing year, irrigating during dry periods

larger because they contain more seeds. Every May more than 60,000 hives of honeybees arrive, each filled with 60,000 to 80,000 honeybees. This will be explored in more detail in another lesson.

PEST MANAGEMENT

Wild blueberries have several pests and diseases. The pest insects that can reduce blueberry production are the blueberry maggot, the spanworm, the flea beetle, and thrips. The diseases that affect blueberries are mummy berry and blight. Weeds are also a problem. They compete with the blueberry plants for light, water, and nutrients and reduce yields. Weeds can also interfere with the harvest of wild blueberries and reduce their quality.

THE WILD ADVANTAGE— DIVERSITY

The wild blueberry is a native and naturally established plant that is well adapted to its environment in Maine, Atlantic Canada, and Quebec where it is now managed to produce a commercial crop. The shorter, cooler summer and cold winter reduce insect and disease activity compared to crops grown farther south. Cultivated fruits and vegetables have limited genetic diversity as growers only select and plant a few known varieties that produce well. Because wild blueberries are produced from native clones, the fields have a high degree of genetic diversity compared with cultivated fruits and vegetables. The genetic diversity of wild blueberries means that some clones will be resistant to certain diseases, so an infection will not be as devastating as it would be for other crops which have an identical genetic makeup.



Pest management

testing, barriers, repellents, isolation, spot treating and, when necessary, chemical controls based on economic and environmental factors. IPM focuses on pest management and ICM addresses both pest management and nutrient management. Both techniques seek to manage blueberry fields to the best economic and environmental results using the least amount of chemicals.

PRODUCTION

As previously described, the wild blueberry produces on a two-year cycle. The first year is vegetative growth; the second year is reproductive growth or production of fruit. Once all conditions are met for a good crop, flowers are pollinated, and the fruit is set, growers monitor fields for problems and hope for good weather and a healthy crop.

HARVEST

The wild blueberry harvest begins in July and lasts for four to six weeks. As in the past, the wild blueberry is still harvested with a hand-held rake. The berries are combed from the stems by thousands of pickers. The harvest rakes made by one company have remained unchanged since 1910 and are manufactured by the grandson of the original inventor. Other manufacturers have made changes and produce a modified wild blueberry rake.



Stringing the fields/harvesting

STRINGING HARVEST LANES

The harvest is conducted with crews of human harvesters called rakers. People come from as far as Canada and Mexico to take part in the harvest. Raking crew leaders mark out harvest lanes eight to ten feet wide in the field a few weeks prior to harvest. Each raker is assigned a lane to rake. These lanes keep the harvest orderly and ensure the whole field is completely harvested.

CARE FOR THE ENVIRONMENT

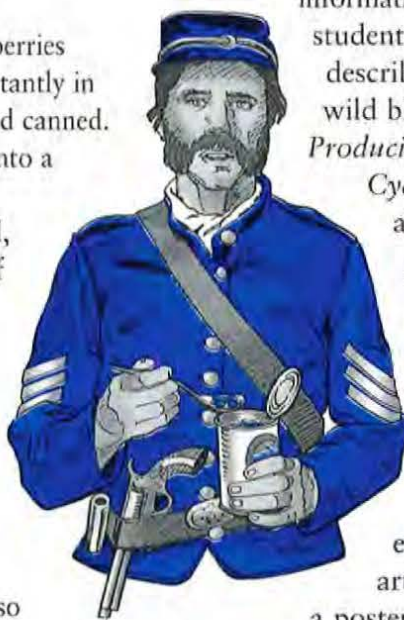
Growers use techniques, such as Integrated Pest Management (IPM) and/or Integrated Crop Management (ICM), to minimize the use of chemical pesticides and fertilizers. Both techniques use a variety of cultural and technological practices such as prevention, scouting,

Machine harvesters are under development. As these machine harvesters are improved and rocks cleared from the fields, more growers are mechanically harvesting their wild blueberries.

PROCESSING

From each harvest, only a few of the berries are eaten fresh. Most berries are frozen instantly in quick freeze tunnels and some are dried and canned. Most wild blueberries are then processed into a huge array of other products.

Wild blueberries from Maine are dried, canned, frozen and baked into hundreds of food, snack, and beverage products. Maine's wild blueberry crop was first processed into cans during the Civil War and sent to feed the Union Army. Wild blueberries have been a mainstay of the Maine economy for almost 150 years. Wild blueberries are found in muffins, pancakes, pies, ice cream, milkshakes, yogurt, cake mixes, cookies, cereals and also taste wonderful fresh.



information that you feel appropriate and ask the students to place the artwork in sequence as it describes the life cycle and production of the wild blueberry or have students read *Producing Wild Blueberries – A Two Year Cycle*. Instruct them to begin thinking about captions for their artwork.

3. Once the students complete their sequence, read the information again to them (or have them re-read it) so that they may create captions for their artwork and write an outline of the process.

4. Have the students write an essay in their own words using the artwork to illustrate the essay or create a poster that accompanies their essay. If the students prefer, they may create their own illustrations.

Have the students use the essay as the basis for giving an oral report with the poster as their visual aid.

5. As the students give their oral reports, have the other students ask them questions.

6. Ask the students how the production cycle of the wild blueberry is unique. (*Wild blueberries are produced every two years rather than every year.*)

7. Have the students discuss the following questions: What are the different types of wild blueberries and cultivated blueberries? How do they compare? (*See background information.*)

What problems might a grower encounter? (*Frost, drought, pest infestation, diseases, cold rainy weather during pollination that keeps the bees from pollinating, bears that break into hives, bears that eat wild blueberries, etc.*)

Why would the wild blueberry growers want to maintain the best quality environment possible? (*They depend upon and live in that environment. Many plan for their children and grandchildren to live and farm there in the future.*)

Why would wild blueberry growers want to limit their use of chemical fertilizers and pesticides? (*Environmental quality, water quality, expense of fertilizers and chemicals, maintaining production from year to year.*)

PREPARATION

Read through the background information and highlight the sections that you feel appropriate to share with the ability and grade level of your students. Make copies of the artwork and life cycle pages titled *Producing Wild Blueberries – A Two Year Cycle*. **NOTE:** The bees in the *Wild Blueberry Poster* are not pollinating wild blueberry flowers. They are seeking new flowers to pollinate.

INTRODUCTION

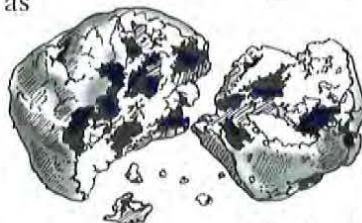
1. Ask the students if they like wild blueberries and what foods they can identify that contain wild blueberries.
2. Write their responses and keep the list in a visible place for this and successive lessons.
3. Ask the students if they know where wild blueberries come from. Tell the class that this lesson will help them learn about Maine's wild blueberries.

ACTIVITY

1. Have the students cut apart the artwork in preparation to sequence it. As they do so, place the poster accompanying this kit in a location visible to the class.
2. Ask the students to listen carefully, they will use the information you are about to give them to conduct this activity. Read the background

EXTENSIONS

1. For older students, share the information about wild blueberry classification and discuss the methods of classifying wild blueberries as you explore this topic in science class.
2. Have the students research wild blueberry products and marketing. What new products could they invent?
3. Invite a wild blueberry grower into the classroom to speak to the students and bring in plant samples, a rake, products, etc.
4. Conduct soil pH tests. Take small samples of soil (1 teaspoon), mix each with a few drops of distilled water, and use pH paper to determine the pH. More extensive soil testing can be conducted with soil testing kits available from biological supply companies.
5. Obtain wild blueberry rhizome cuttings from a grower and have the students start their own plants or grow them from seed.



EVALUATION

1. Assess the thoroughness and accuracy of the essays and oral reports.
2. Evaluate the captions of the artwork for brevity, accuracy, and descriptive nature.
3. Have the class create a rubric to evaluate the posters produced and have the students self-evaluate their products and artwork.

RESOURCES

1. <http://www.wildblueberries.maine.edu/>
2. <http://www.umext.maine.edu/topics/bluecran.htm/>
3. <http://www.wildblueberries.maine.edu/FactSheet/220.htm/>

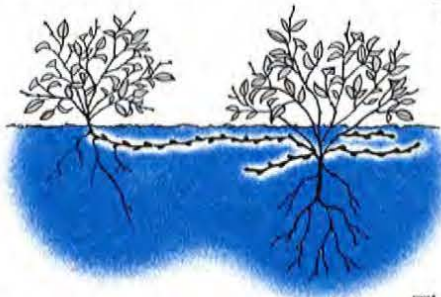
NOTES:

PRODUCING WILD BLUEBERRIES – A TWO YEAR CYCLE

YEAR ONE

Spring – Starting New Plants

Initially, many wild blueberry plants start naturally from tiny seed. Once these plants are established, they send out underground stems known as rhizomes (horizontally spreading stems). Rhizomes grow near the surface of the soil and send up new stems above the soil and roots below that begin a new plant. These new stems are known as a clone because all stems are identical to the parent plant from which the rhizomes grew. One clone can cover from 75 to 250 square feet. An acre of wild blueberries (the size of a football field) may have 200 to 500 different clones.



Summer – Growing Vegetation

Once the clones develop, they grow strong branches and leaves throughout the summer. The grower makes sure that the plants are healthy and growing well by testing the

soil pH (wild blueberries like an acidic soil), fertilizing (if needed), preventing disease, controlling insects, and that adequate water is available. Plant leaf samples are taken to check plant nutrition. Maine is blessed with adequate amounts of rainfall in most years, usually 45 inches per year. But since it does not always rain when needed, growers have begun to use irrigation to supplement rainfall during dry summers. When the plant is growing well it will develop flower buds for next year's fruit.

Fall – Preparing for Winter

Once the fruit buds are set and the weather turns cool, the plant prepares for winter by going dormant. The fall color of wild blueberry fields provides a brilliant contrast to the evergreen trees. The plants soon lose their leaves.

Winter – Dormancy

The bare twigs of the wild blueberry plant glisten with snow and ice as winter takes hold. Surviving the cold winds of winter is best done under a protective blanket of snow. Quick temperature changes both up and down can be harmful to the wild blueberry plant and fruit buds. The influence of the ocean on Maine's coastal growing areas helps to lessen these quick changes.





YEAR TWO

Spring – Flowering and Pollination

In the spring, growth resumes with new leaves growing from the buds set last fall.

In May, the wild blueberry plants flower for two to four weeks. Wild blueberry flowers need cross-pollination. This means that pollen from a plant cannot fertilize that same plant. Pollen from another plant is needed to fertilize and set fruit on a plant. Insects are needed for this cross-pollination to occur. Honeybees play a huge role in pollinating wild blueberry fields. Every May more than 60,000 hives of honeybees arrive, each filled with 60,000 to 80,000 honeybees.

Summer – Fruit Development for a Large Crop

Once fruit is set, growers need to ensure that a large crop develops. Growers make sure water is adequate, competition from weeds and insect damage are reduced, and disease is controlled. Wild blueberries have several pests and diseases. Weeds compete with the blueberry plants for light, water, and nutrients and reduce yields. Growers hire scouts to check their fields and alert them to any insect or disease problems. Then action will be taken, if needed. The shorter, cooler summer and cold winter reduce insect and disease activity compared to crops grown farther south. Because wild blueberries are produced from native clones, the fields are more resistant than other cultivated fruits and vegetables. Growers use techniques such as Integrated Pest Management (IPM) and/or Integrated Crop Management (ICM) to minimize the use of chemical pesticides and fertilizers.

Late Summer – Harvest

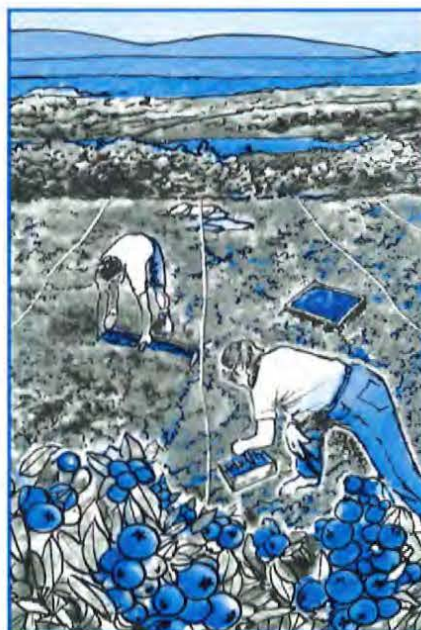
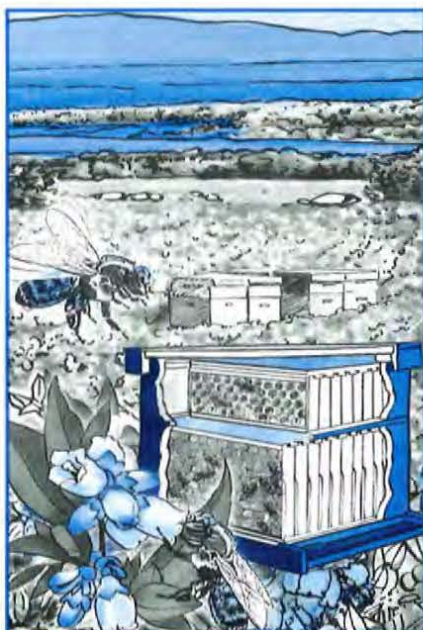
The wild blueberry harvest begins in July and lasts for four to six weeks. Today, most wild blueberries are harvested by thousands of pickers with hand-held rakes that comb the berries from the stems. The harvest rakes made by one company have remained unchanged since 1910. The harvest is conducted with crews of human harvesters called rakers. People come from as far as Canada and Mexico to take part in the harvest. Raking-crew leaders mark out harvest lanes eight to ten feet wide in the field a few weeks prior to harvest. Each raker is assigned a lane to rake. These lanes keep the harvest orderly and ensure the whole field is completely harvested. Machine harvesters are under development. As these machine harvesters are improved and rocks cleared from the fields, more growers are mechanically harvesting their wild blueberries. From each harvest, only a few of the berries are eaten fresh. Most berries are frozen instantly in quick freeze tunnels.

Fall – Pruning

Once the crop is harvested, it is time to prune the plant to the ground with fire or mowing. The purpose of pruning the wild blueberry plant is to invigorate the wild blueberry and increase its productivity. Pruning also serves to disrupt the insect and disease life cycles. Pruning by burning provides an additional benefit of helping to control insects and diseases that reside on the plant residue and soil surface.

Fall and Winter – Processing into Products

Wild blueberries that are frozen at the time of harvest are later dried, canned, and processed into other products throughout the year. The plants in their newly trimmed state will survive the winter and begin again in the spring.



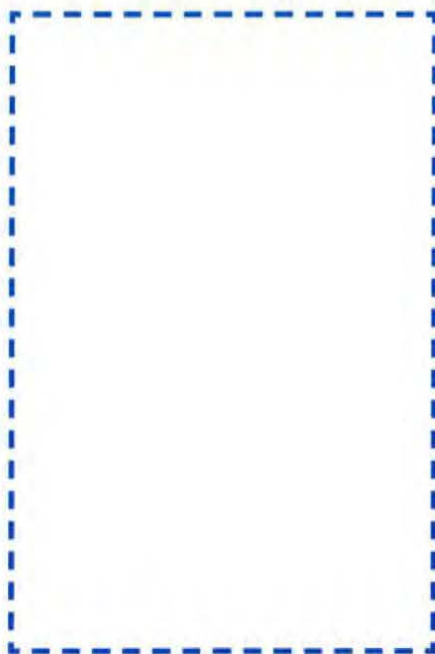


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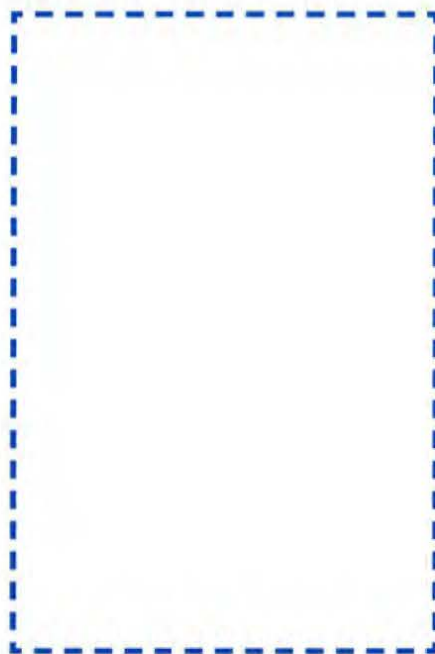
LIFE CYCLE

Paste illustrations in order and label them.

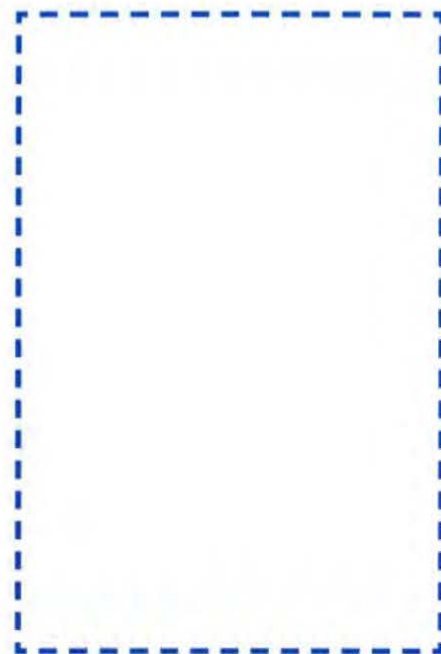
YEAR ONE



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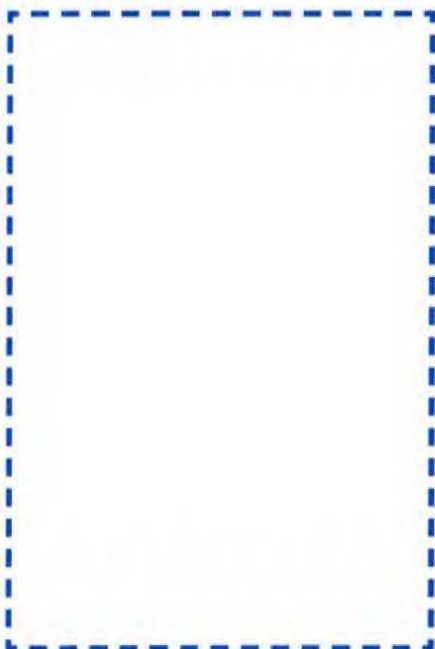


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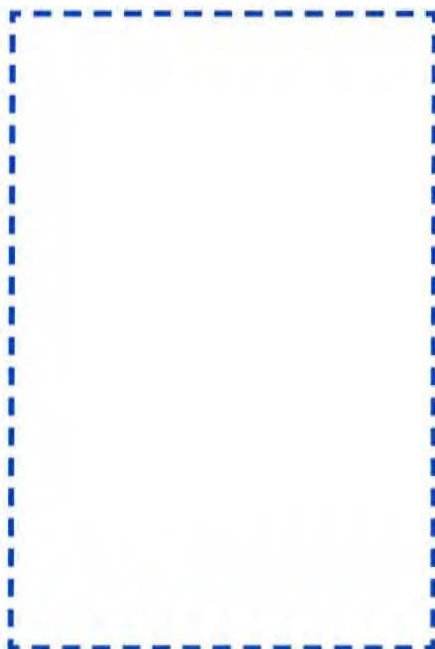


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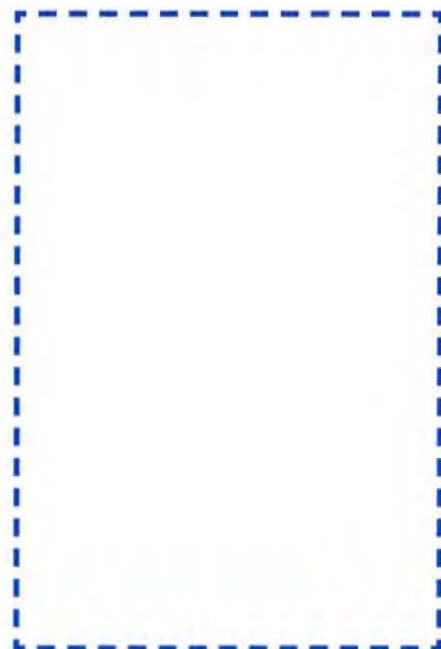
YEAR TWO



1. _____



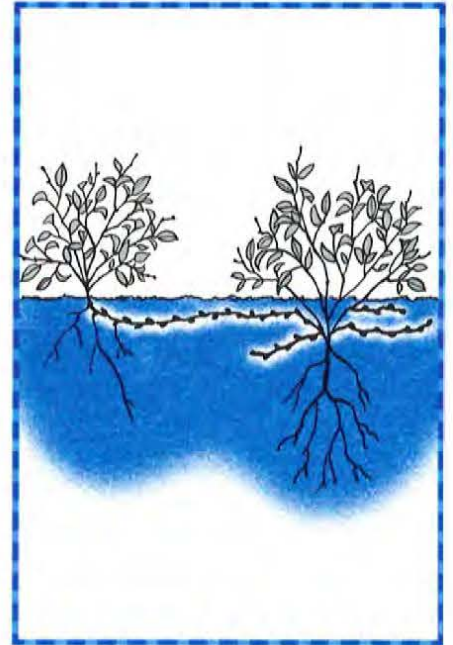
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LIFE CYCLE

Cut out illustrations and paste them in order on other sheet.

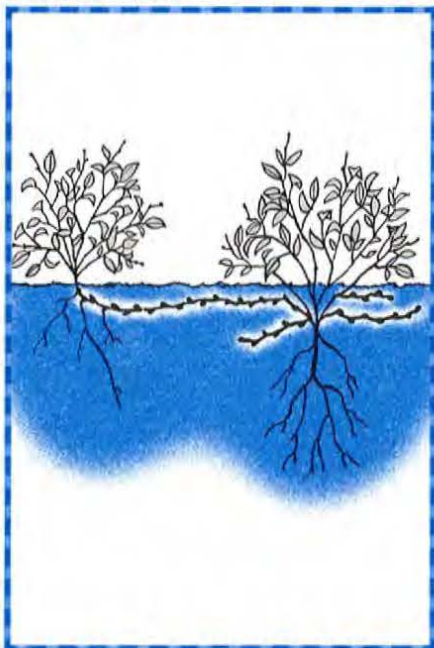


Name ANSWER KEY

LIFE CYCLE

Paste illustrations in order and label them.

YEAR ONE



Cloning



Pest management



Winter dormancy

YEAR TWO



Bloom/pollination



Stringing the fields/harvesting



Pruning by burning



NOTES:

ANIMALS AND WILD BLUEBERRIES



BRIEF DESCRIPTION

Students will explore the interaction of several animals with the wild blueberry including, but not limited to, honeybees, bumblebees, black bears and pest insects.

STATE OF MAINE LEARNING RESULTS

Subject	Section	Grades 3-4	Grades 5-8
Science and Technology	A	4	3
	B	1, 4	4, 5
	D		4
	K	6	8
	L	5	5
Career Preparation	A	3	
English Language Arts	D	3, 4, 6	
	E	3	2
	G	3	4, 7, 9
	H	1, 2, 3	2, 6, 7
Mathematics	K	1	2

OBJECTIVES:

The students will:

1. list and describe several of the animals (other than humans) that interact with wild blueberries.
2. select, research and write a report using traditional and non-traditional sources about one of the following: honeybees, bumblebees, solitary bees, or black bears.
3. complete a word puzzle using appropriate vocabulary.

LIFE SKILLS:

Developing vocabulary, editing, evaluating the credibility of a source of information, evaluating information, reading, researching information, writing

MATERIALS:

- Writing materials
- Copies of the bubblegram and page with flowchart symbols
- Computers with Internet access
- Library reference materials

ESTIMATED TEACHING TIME:

Three 45-minute class periods plus time for research and writing

PREPARATION:

Make copies of the bubblegram puzzle and page with flowchart symbols

VOCABULARY:

Black bears, bumblebees, bush, Canada, clone, cross-pollination, honeybees, irrigation, pollinate, soil, solitary bees

BACKGROUND

Wild blueberries flourish in the acidic, glacial soils and wild northern climate of Maine and Southeastern Canada. Wild blueberries grow naturally in open areas known as barrens. Pine trees are usually found near wild blueberry barrens. They help make the soil acidic for the acid-loving wild blueberry plants. Wild blueberry plants grow naturally once the forest is cleared. While blueberry plants can be planted from seed, rhizome cutting, stem cutting, sod cutting and tissue culture, all wild blueberry commercial fields have been established naturally. Clearing away the forest has allowed humans to expand the growing area of wild blueberries. Rainfall averages 45 inches per year in wild blueberry country. This rainfall is needed to produce a good blueberry crop. Some producers will irrigate their fields if the rainfall is inadequate.

Long before European settlers came to the New World, some forested land had been cleared with fire by Native Americans to let wild blueberry plants grow. These wild

blueberry fields were being managed by Native Americans to produce larger crops of blueberries. Native Americans learned that by burning the fields every other year, the plants would thrive, more productive bushes would grow, and fewer insects and diseases would appear, so they could harvest larger crops of wild blueberries.



They taught this technique to the European colonists and shared their barrens. Today many wild blueberry growers, including descendants of the Native Americans, practice those same traditional methods of growing and harvesting that were used for centuries. But now they also incorporate new methods and techniques.

Researchers assist by developing new methods to improve wild blueberry production while maintaining a healthy environment.

Maine produces 25 percent of all blueberries in North America (cultivated and wild). Maine is the largest producer of wild blueberries in the world. Wild blueberries grow on 60,000 acres in Maine.

PLANT GROWTH

The life cycle of the blueberry begins with new plants. Initially, wild blueberry plants grow from seed. New plants send out underground stems known as rhizomes and create clones. One clone can cover from 75 to 250 square feet. An acre of wild blueberries (the size of a football field) may have from 200 to 500 clones. Once the vegetative growth is complete, the plants set flower buds for the next year and then go dormant for the winter.

BLOOM,
POLLINATION
AND
POLLINATORS

In the spring, growth resumes and the plants flower in May. Most blueberry flowers are pink to white in color and shaped like a bell. Bloom occurs over a two- to four-week period. Blueberries need cross-pollination. This means that pollen from a clone

cannot fertilize that same clone. Pollen from another clone is needed to fertilize and set fruit on a plant. Insects are needed for this cross-pollination to occur. The most common pollinator in use is the honeybee, *Apis mellifera*. By using honeybees, there is more fruit set and the wild blueberries are larger because they contain more seed in each wild blueberry. Every May over 60,000 hives arrive, each filled with 60,000 to 80,000 honeybees. It is estimated that over two billion bees are working on the wild blueberry barrens each spring.

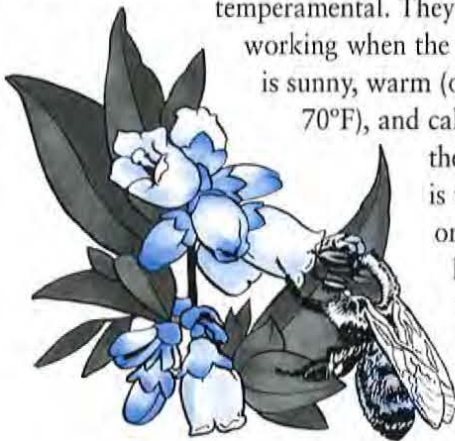
These honeybees pollinate 30,000 acres of wild blueberry bushes. Some beekeepers come from nearby the wild blueberry barrens. Most are migrants that travel from state-to-state, leasing their hives to farms across the country as their crops bloom and require pollination.



The honeybee is a very industrious insect that will visit more flower types than any other insect. In a single day, a honeybee will make a dozen trips, or more, to and from the hive and may visit more than a thousand flowers. Worker bees visit flowers to

collect both pollen and nectar. Pollen is collected in the dense, branched hair on the bee's body. The bee combs the pollen from the body hair and packs it into pellets on the hind legs. Both pollen and nectar, necessary for food, are stored in the wax comb of the hive. Honeybees can be

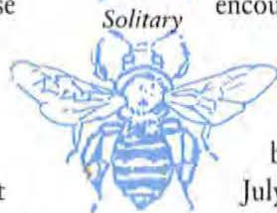
temperamental. They prefer working when the weather is sunny, warm (over 70°F), and calm. If the weather is wet, windy or cold, the honeybees will not fly or pollinate.



Honeybees are fussy about their blossoms as well. Scout bees check out the field for the most appealing blossoms, tell the other bees back at the hive where those blossoms are in a "dance," and the rest of the hive follows to those bushes first. (Details of the honeybee dance can be found at the Web site listed in the reference section.)

The wild blueberry flowers produce nectar at the base of the flower. Insects such as the honeybee must brush past the pollen-laden anthers to reach the nectar. As they leave the flower, they may place a leg on the stigma, or their bodies may brush its sticky surface and leave pollen from one or more other flowers. This causes pollination, and the flower will likely be fertilized. Once the flower is fertilized, it begins to lose its attractiveness, and the ovary begins to develop into a fruit. This is known as fruit set. A well-pollinated flower can result in a berry containing 60 or more small seeds. The number of seeds influences the size and rate of fruit ripening. More seeds cause larger and earlier ripening fruit. Good pollination is essential to a good crop of wild blueberries.

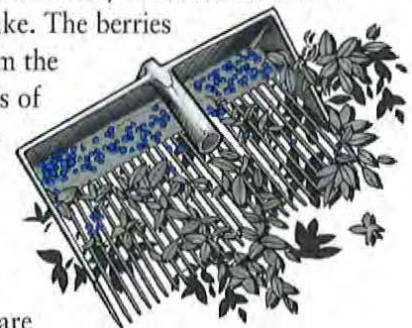
Other bees and insects also naturally pollinate wild blueberries. Large, yellow and black, or orange bumblebees as large as a human thumb and smaller



solitary bees pollinate significant numbers of wild blueberry flowers. Bumblebees play a major role in wild blueberry pollination because of their collecting habits. The bumblebee works a few blossoms in one spot and then flies to another spot and works those flowers. This facilitates cross-pollination because the bumblebee does not work clones of its original plant. If the bumblebee stayed in one spot and visited all of the flowers on the clone, cross-pollination would not occur. Remember, the clone is identical, genetically, to the original plant that grew from seed. There are over 59 species of wild solitary bees that have been observed in wild blueberry barrens. These solitary bees nest in unplowed, rough ground. Their flight activity is usually within 200 to 300 yards of their nest. While it is believed that these are the primary pollinators of wild blueberries, their numbers fluctuate from year to year and cannot be relied on to provide adequate pollination every year. Researchers are studying wild blueberry pollination to determine new ways to encourage native bees and introduce new pollinators such as alfalfa leafcutting bees.

After a good fruit set is assured, the wild blueberry bushes produce fruit that is ripe in late July and August. The wild blueberry harvest begins in July and lasts for four to six weeks. As in the past, the wild blueberry is harvested with a hand-held rake. The berries are combed from the stems by thousands of pickers. Many of the harvest rakes have remained unchanged since 1910 and are

manufactured by the grandson of the original inventor. Other manufacturers have made adaptations to the original rake. People come from as far away as Canada and Mexico to take part in the harvest. Another animal enters the picture during harvest, the black bear. Many pickers have their first black bear sighting during harvest.



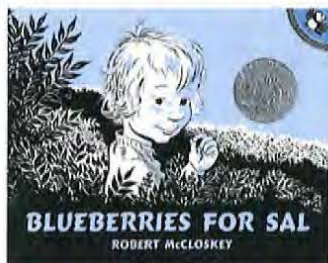
BLACK BEARS AND WILD BLUEBERRIES

Wild blueberries ripen just at the time that bears are searching for food to give them the energy that is converted into body fat for their winter hibernation. Bears have been known to travel 10 to 15 miles in a day to find a rich wild blueberry patch.

Stories of close encounters with bears on Maine's rocky barrens abound. In Pauline W. Moore's *Blueberries and Pulsey Weed: The Story of Lovell, Maine*, she writes:

When 'Went A-Blueberrying' was recorded it was really summer. Blueberries were plentiful, especially where the land had been burned over...

If it had been an extremely dry summer, the berry pickers had to watch out for bears that stood up on their hind legs and reached for the big ones just as the humans did. Many bears have been seen by blueberry pickers but never has anyone been hurt. Both the bears and humans run as fast as possible, the only difference being that the human drops a basket full of his best berries.



From *BLUEBERRIES FOR SAL* by Robert McCloskey, copyright 1948, renewed (c) 1976 by Robert McCloskey. Used by permission of Viking Penguin, an imprint of Penguin Putnam Books for Young Readers, a division of Penguin Putnam Inc.

Nor can we ignore the unforgettable impact that *Blueberries for Sal* has had on young children across the United States. In the book, a young girl in Maine wanders away from her mother while blueberry picking to come face-to-face with a mother black bear whose cub has also wandered away to come face-to-face with Sal's mother. Other interesting accounts of humans and bears looking for wild blueberries in the same berry patch can be found in town and family histories. Harvest time is not the only time that bears have an interest in the wild blueberry barrens. Many beekeepers have been visited, much to their dismay, by a bear keen on making his or her own harvest of wild blueberry honey and larvae made by the occupants of the visiting hives. Although beekeepers use electric fences to protect the hives, it seems that the bears always find some hives. One story recounts a small trailer stacked high with hives that was left out overnight. When the

beekeeper returned in the morning, the trailer was gone. But there were bear tracks that led into the woods. Several men followed the tracks and eventually found the hives and trailer. The bear had pulled it into the woods for a leisurely feast of wild blueberry honey.

AFTER HARVEST

Only a few of the berries harvested are eaten fresh. Most berries are frozen instantly in a quick-freeze tunnel, and some are dried and canned. Most wild blueberries from Maine are then processed into a huge array of other products. Wild blueberries from Maine that are dried, canned and frozen are baked into hundreds of foods and snacks and made into beverage products. Wild blueberries are found in muffins, pancakes, pies, ice cream, milkshakes, yogurt, cake mixes, cookies, cereals and also taste wonderful fresh.

OTHER ANIMAL AND WILD BLUEBERRY INTERACTIONS

Wild blueberries have several pests and diseases. The insects that can reduce blueberry yield are the blueberry maggot, the blueberry spanworm, the flea beetle, sawflies, grasshoppers, blueberry leaf beetles, the strawberry rootworm, and thrips. Growers control these pest insects with a combination of cultural, mechanical, biological, and chemical controls known as Integrated Pest Management (IPM).



PREPARATION

- Read through the background information and highlight the sections that you feel appropriate to share with the ability and grade level of your students. Also add information from the previous lesson if needed.
- Make copies of the *Bubblegram* activity page and symbol page.
- Have students retain the handout, *Producing Wild Blueberries – A Two Year Cycle*, from the previous lesson.
- Have the school librarian obtain copies of the Blueberry Pest Fact Sheets listed in the reference section or find them on the Internet and make copies.

ACTIVITY ONE

1. Have the students refer to the handout, *Producing Wild Blueberries – A Two Year Cycle*, from the previous lesson. Share with the class the portions of the supporting information that you feel appropriate for your students' ability level that are in addition to the information in the handout. Make a list on the board of the animals that interact with wild blueberries, including human interaction.
2. Ask the students to select one of these animals, research it using traditional and non-traditional methods, and write a report about it. For older students, perhaps a blind selection process should be used to insure that as many animals are covered as possible and everyone does not select only black bears or honeybees, for example. A listing of Web sites is provided in the reference section of the lesson. Ask the students to include illustrations, if possible.
3. Have older students use these reports as the basis for an oral presentation of their findings.

ACTIVITY TWO

1. Have the students create flowcharts of the production cycle of the wild blueberry. This should cover the two-year cycle and include inputs and outputs. As a class, determine what geometric figures to use. For example, rectangles could indicate the stages of the plant's life cycle, circles could be used to indicate inputs of fertilizer, lime or sulfur, etc.
2. Select a symbol, such as an inverted triangle, to indicate animal interactions, both positive and negative.

3. Have the students indicate all outputs including honey production from the beekeepers.
4. Once the flowcharts are complete, discuss whether all factors have been considered. Ask:

Are research and scientists included?

Is education included? How do growers learn about new techniques and technology?

Have you followed the wild blueberries to the consumer and are all of the businesses that are involved included? Is marketing included? Are grocery stores included? Etc.

ACTIVITY THREE

1. Have the students complete the *Bubblegram* and find the mystery word.
2. A Word Bank is provided for younger students to select from in completing the activity. If this is not needed for the students, remove it from the page before copying.

EXTENSIONS

1. Divide the class into small groups and give each group a segment of the process about which to develop a flowchart. One group is given the first year of growth, another the second year of growth, another harvest and transportation to a processing plant, another processing into finished products, and the last marketing. Have the students create their flowcharts using the computer.
2. Make the flowchart an economic flowchart that indicates the flow of money and includes credit, interest and businesses involved through to the consumer. A page of symbols is included for student use.
3. Invite either a Cooperative Extension educator or wild blueberry producer into the class to tell about his/her business and career.
4. Have students develop their own crossword puzzle, acrostics, word finds, etc. Have them make clean copies of their puzzles on a computer; compile these into a booklet of blueberry word puzzles; illustrate the booklet with line drawings; make copies and provide them to the whole class.



EVALUATION

1. Assess the thoroughness and accuracy of reports produced. The amount of information will vary a great deal, and this should be taken into consideration.
2. Assess the thoroughness and accuracy of the flowcharts produced.
3. Use the vocabulary as spelling words or for a vocabulary quiz.
4. Evaluate the accuracy of the answers on the BUBBLEGRAM.
5. Use any of the extension activities as further evaluation activities or to produce materials for student portfolios.

RESOURCES / WEB SITES

Extension Information

<http://www.wildblueberries.maine.edu>
<http://pmo.umext.maine.edu/>

BLACK BEAR WEB SITES

<http://www.nature-net.com/bears/black.htm>
<http://www.angelfire.com/ga/bear/>
<http://www.tpwd.state.tx.us/nature/wild/mammals/bearfact.htm>

HONEYBEE WEB SITES

Tales From the Hive

<http://www.pbs.org/wgbh/nova/bees>

Beekeeping

http://edis.ifas.ufl.edu/BODY_AA088

Honey

<http://www.honey.com>

Honeybee Trivia

<http://www.umt.edu/biology/bees/trivia.htm>

NASS Report

<http://gears.tucson.ars.ag.gov/>

National Honey Board

<http://www.nhb.org>



The Value of Honeybees as Pollinators of U.S. Crops in 2000

<http://bee.airoot.com/beeculture/>

OTHER BEES AND GENERAL ENTOMOLOGY TOPICS

BugBios, Insects on the Web

<http://insects.org/>

Bumblebees

<http://www.farminfo.org/bees/bumble-bees-m.htm>
<http://Hercules.users.netlink.co.uk/Bee.html>

Classification and Identification

<http://members.aol.com/YESedu/arthrocl.html>

General

<http://www.isis.vt.edu/~danjun/text/Links.html>

Insect Goods and Services

<http://www.ndsu.nodak.edu/instruct/brewer/goods.htm>

Introduction to Insects

<http://members.aol.com/YESbugs/mainmenu.html>

Young Entomologist Society, MiniBeast Museum

<http://members.aol.com/YESbug/zooseum.html>

BOOKS ON THE AMERICAN BLACK BEAR (URSUS AMERICANUS)

Bunnell, Fred. "American Black Bear." *The Encyclopedia of Mammals*. Ed. D. Macdonald. New York: Facts on File, 1993.

Burt, William H. *Peterson Field Guide Series: A Field Guide to the Mammals of North America*. Third edition. Boston: Houghton Mifflin Co., 1980.

McCracken, Catherine, D. A. Rose, K.A. Johnson. *Status, Management, and Commercialization of the American Black Bear*. Washington, DC: World Wildlife Fund – TRAFFIC USA, 1995.

Nowak, Ronald M. *Walker's Mammals of the World*. Volume 2. 5th edition. Baltimore: Johns Hopkins University Press, 1991.

United States Fish & Wildlife Service. "Wildlife Biologue: American Black Bear." U.S. Department of the Interior – USFWS, 1995.



Ward, Paul and Suzanne Kynaston. *Wild Bears of the World*. New York: Facts on File, Inc., 1995.

Wexo, John Bonnett. *ZooBooks: Bears*. San Diego: Wildlife Education, Ltd., 1993.

COOPERATIVE EXTENSION PUBLICATIONS

Available from the University of Maine at Orono or
on the Web at <http://www.wildblueberries.maine.edu>

Blueberry Flea Beetle

Fact Sheet No. 200, Bulletin 2372

Blueberry Leaf Beetle

Fact Sheet No. 203, Bulletin 2369

Blueberry Sawfly

Fact Sheet No. 206, Bulletin 2285

Blueberry Spanworm

Fact Sheet No. 197, Bulletin 2371

Blueberry Thrips

Fact Sheet No. 202, Bulletin 2373

Commercial Bumble Bee Management

Fact Sheet No. 302, Bulletin 2421

Field Conservation Management of Native

Leafcutting and Mason Osmia Bees

Fact Sheet No. 301, Bulletin 2420

Grasshoppers

Fact Sheet No. 198, Bulletin 2368

Honeybees and Blueberry Pollination

Bulletin 629

Monitoring for the Blueberry Maggot

Fact Sheet No. 201, Bulletin 5053

Red-Striped Fireworm

Fact Sheet No. 205, Bulletin 2284

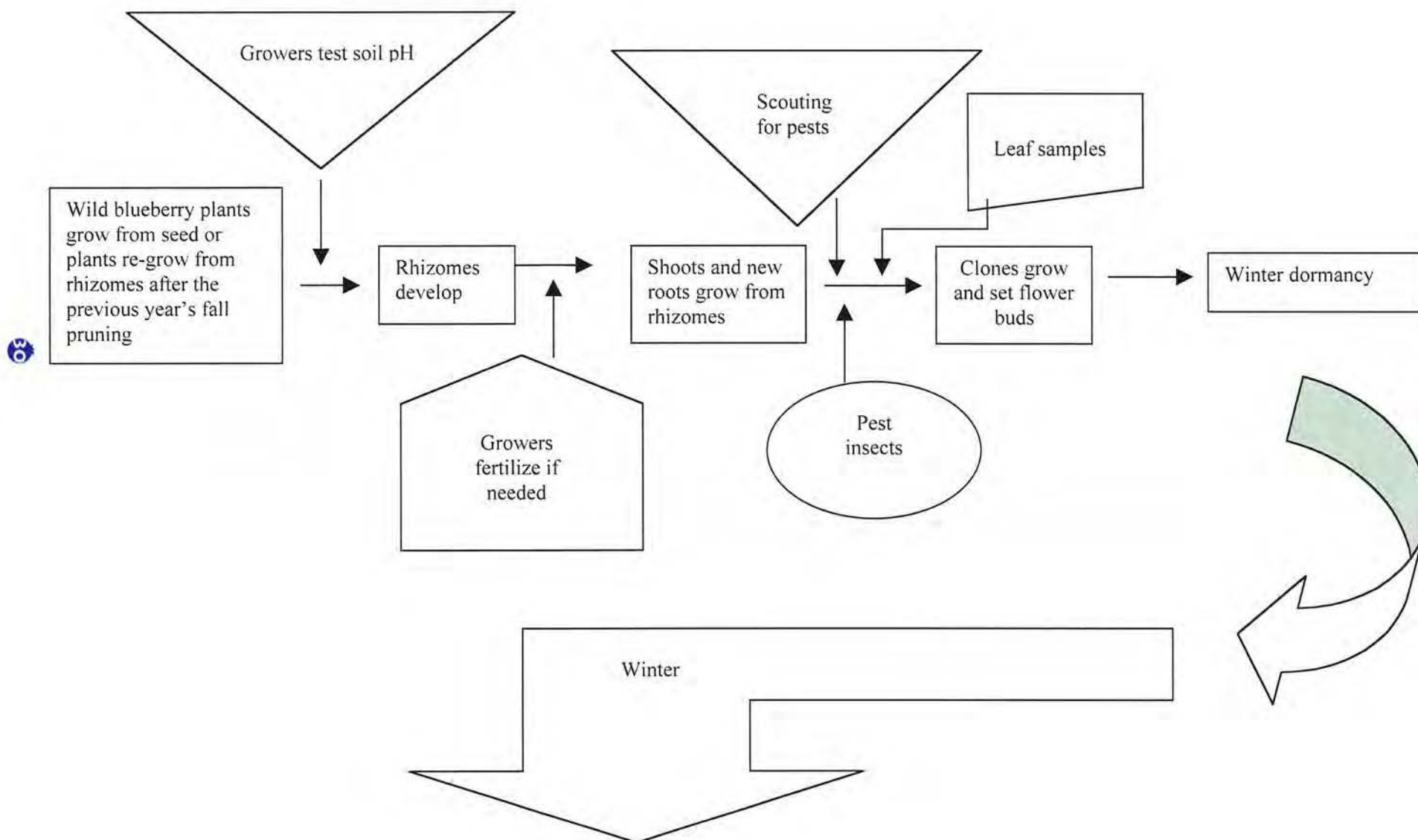
Strawberry Rootworm

Fact Sheet No. 199, Bulletin 2370

NOTES:

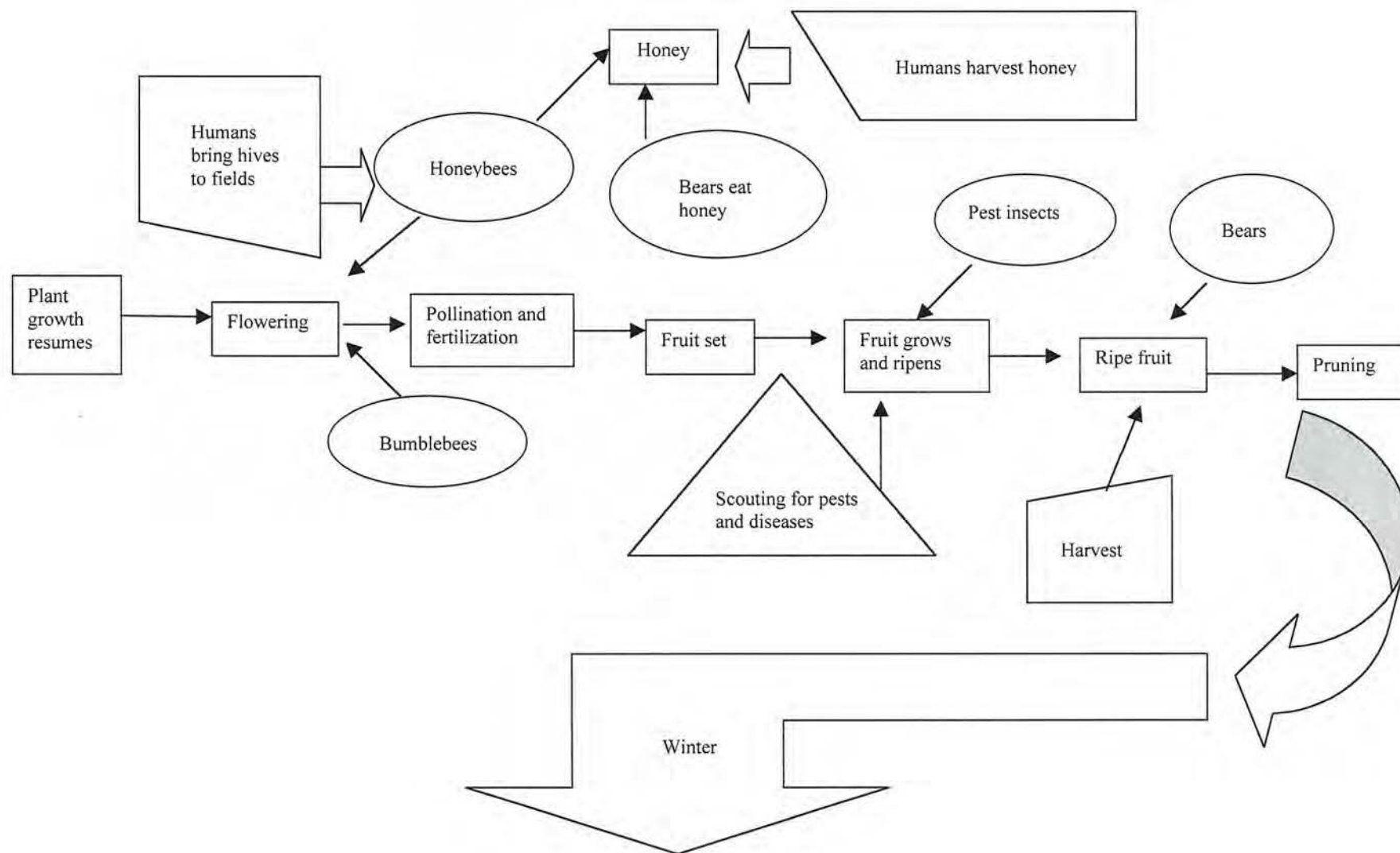
SAMPLE FLOWCHART

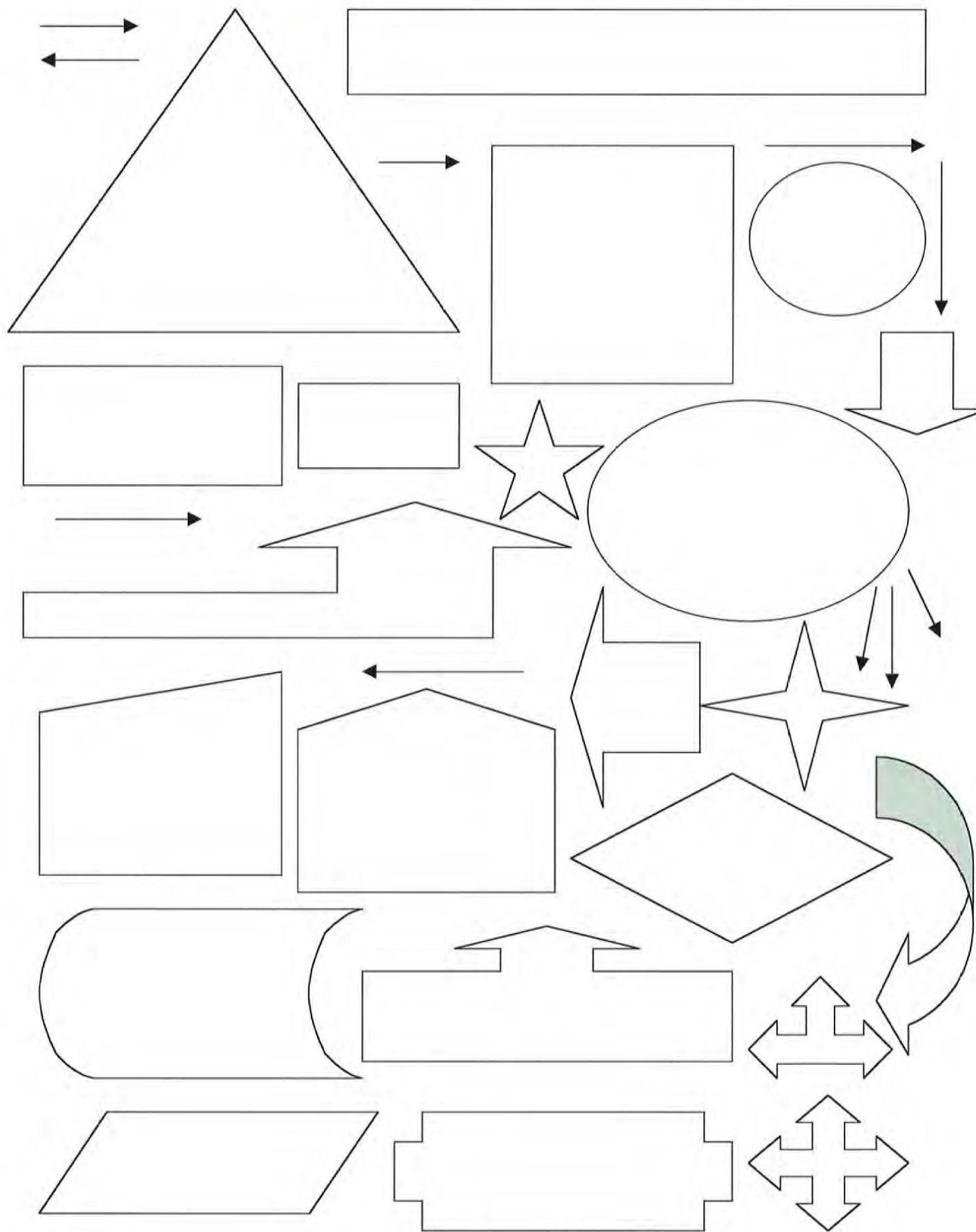
FIRST YEAR OF GROWTH



SAMPLE FLOWCHART

SECOND YEAR OF GROWTH







Name _____

WORD BANK

Black bears, bumblebees, bush,
Canada, clone, honeybees, irrigation,
Maine, pollinate, rain, soils, solitary
bees, travel, warm, white

BUBBLEGRAM

Solve these puzzle questions by placing the correct word to complete the sentence
to find the bubblegram mystery word.

	1.	_____
	2.	_____
	3.	_____
	4.	_____
	5.	_____
	6.	_____
	7.	_____
	8.	_____
9.		_____
	10.	_____
	11.	_____
	12.	_____
13.		_____
14.		_____
	15.	_____



BUBBLEGRAM CLUES

1. Honey bees like the weather to be sunny, _____, and calm when they work.
2. Wild blueberries that grow in _____ and Canada are one of only four fruits native to North America.
3. Large _____, colored yellow and black or sometimes orange, the size of your thumb, are a second type of insect that is known to pollinate wild blueberry flowers. These bees will work in cooler temperatures, earlier in the morning, and even in moderately heavy rain.
4. In addition to Maine, the world's other wild blueberry producer is _____.
5. The large _____ is a mammal that loves to eat wild blueberries. In the past many wild blueberry pickers have seen this mammal in the barrens.
6. A new wild blueberry will send out rhizomes and produce new plants that are _____s of the original plant. Each of these is genetically identical to its parent plant.
7. Most wild blueberries are produced on a low-growing _____.
8. The most popular wild blueberry pollinator is the _____. Growers actually lease colonies to come to their fields for this purpose.
9. _____ also pollinate wild blueberries but are less well known.
10. Wild blueberry flowers can be either pink or _____.
11. Bears have been known to _____ 10-15 miles per day to find a rich wild blueberry patch.
12. Maine usually receives 45 inches of _____ per year in wild blueberry country. This is needed for a good crop.
13. Some producers may supplement rainfall particularly in drought years with _____.
14. Wild blueberry flowers require assistance from bees and other insects to _____ their flowers with pollen from another plant in order to set fruit.
15. Maine and southeastern Canada have _____ that are acidic and just right for the production of wild blueberries.



BUBBLEGRAM

Solve these puzzle questions by placing the correct word to complete the sentence to find the bubblegram mystery word.

1. W A R M
2. M A I N E
3. B U M B L E B E E S
4. C A N A D A
5. B L A C K B E A R
6. C L O N E
7. B U S H
8. H O N E Y B E E
9. S O L I T A R Y B E E S
10. W H I T E
11. T R A V E L
12. R A I N
13. I R R I G A T I O N
14. P O L L I N A T E
15. S O I L S



NOTES:

HEALTH AND NUTRITION – WILD BLUEBERRY STYLE



BRIEF DESCRIPTION

The students will learn about nutrition labeling and the nutritional value and other health benefits of wild blueberries, and design their own nutritious, wild blueberry food product with a nutrition label.

STATE OF MAINE LEARNING RESULTS

Subject	Section	Grades 3-4	Grades 5-8
Health and Physical Education	A	1, 7	1, 6, 7, 8
	B	1	1, 2
	C	1	3
	D	1	1
Mathematics	A	1	1, 2, 3
	B	1	1
	C	1, 2	2
Science and Technology	M	1, 4, 7	5, 6
English Language Arts	A	1, 5	8
	D	3	5

OBJECTIVES:

The students will:

1. describe and accurately read a nutrition label.
2. describe the nutritional value of wild blueberries.
3. describe the latest health benefits beyond nutrition (including antioxidants) that scientists are discovering in wild blueberries.
4. design their own nutritious, wild blueberry food product, complete with a nutrition label.

LIFE SKILLS:

Analyzing, comprehending, developing creativity, reading for information, making nutritious food choices

MATERIALS:

- Copies of the *USDA Food Guide Pyramid*
- Copies of the *USDA Food Guide Pyramid for Young Children*
- Copies of *Reading Nutrition Labels*
- Ingredients for *Purple Cows*, if desired

ESTIMATED TEACHING TIME:

Three to four 45-minute class periods

PREPARATION:

Make copies of the food guide pyramids and nutrition labeling activity sheet. Gather ingredients for *Purple Cows*, if desired.

VOCABULARY:

Calories, cholesterol, dietary fiber, fat, nutrients, nutrition, vitamins, minerals, sodium, antioxidant

BACKGROUND

From the time that humans first harvested wild blueberries and included them in their diets, they have been accepted as a nutritious food. Wild blueberries contain many essential nutrients. Those nutrients are vitamins, minerals, and carbohydrates. Wild blueberries also contain fiber. Wild blueberries are an excellent source of vitamin C. They have no cholesterol or sodium and are low in calories.

Scientists are now discovering that the health benefits of wild blueberries are much greater than just the nutrients they contain. Recent studies indicate that the pigment that gives wild blueberries their distinctive deep-blue color is a natural antioxidant. The pigment is called anthocyanin (an-tho-sy-ann-in). Antioxidants are substances that help protect the body against cancer, heart disease and the effects of aging. They are linked to better eyesight, circulation and cancer prevention. In fact, United States Department of Agriculture (USDA) research shows that of 40 fruits and vegetables studied, blueberries rank number one in antioxidant activity. See the fact sheets and brochures included with this kit for additional information on this topic.

A basic nutritional fact sheet for students is included with this lesson to supplement and/or review nutrition lessons traditionally taught.

INTRODUCTION

1. Introduce any unfamiliar vocabulary and have the students research their definitions.
2. Review any previous nutritional instruction or use the handout on nutrition to cover the basics.

ACTIVITY ONE

1. Hand out copies of the *USDA Food Guide Pyramid*, one per student. Ask the class to identify where wild blueberries would be placed in the pyramid. (*Fruit Group*)

Nutrition Facts

Serving Size: 5 ounces or 140g
(1 cup) of Wild Blueberries

Amount per serving

Calories 80 **Calories from fat 0**

% Daily Value*

Total Fat 0g **0%**

Saturated Fat 0 g

Polyunsaturated 0 g

Monounsaturated 0 g **0%**

Cholesterol 0 mg **0%**

Sodium 0 mg **0%**

Potassium 85 mg **2%**

Total Carbohydrate 18 g **6%**

Dietary Fiber 4 g **17%**

Sugars 13 g

Protein less than 1 g

Vitamin A 0% • Vitamin C 14% • Calcium 2% • Iron 0%
Magnesium 2% • Thiamine 0% • Riboflavin 0% • Niacin 0%

*Percent Daily Values are based on a 2,000 calorie diet.

2. Hand out the *USDA Food Guide Pyramid for Young Children*. Ask the students to compare and contrast it with the previous version. What are the differences? What are the similarities? What foods do young children need in different quantities from students in your class and what age level is this second food guide pyramid appropriate for? Why?

3. Take the list of foods made with blueberries previously developed in the *Producing Wild Blueberries* lesson and categorize each one on both pyramids.

ACTIVITY TWO

1. Hand out copies of the *Reading Nutrition Labels* activity sheet, one per student. Ask the class to complete the activity sheet.

2. Discuss the answers.

3. Present the additional information about the health benefits of wild blueberries beyond nutrition, antioxidant properties, protection against heart disease, cancer and other diseases of aging, etc., as appropriate for the ability level of your class.

4. Have students conduct Internet research to further explore antioxidants, pigments, flavonoids, etc., that are now being discovered and researched.

ACTIVITY THREE

1. Have the students divide into small groups. Ask each group to develop a wild blueberry product, formulate a recipe or bring one in from home, design the package, create a nutrition label, and decide how to market the product in conjunction with the lesson on advertising.
2. Ask the school cafeteria to include some of the students' recipes with the school lunch.

3. Make some wild blueberry products as a class project: dry wild blueberries to make wild blueberry raisins, freeze wild blueberries into small snack packs and eat them as a frozen snack, make wild blueberry popsicles, wild blueberry smoothies or make Purple Cows.

3. Have the students create a Venn diagram of foods that depicts how one food may provide a variety of nutrients.

4. Make classroom cooking projects: fruit salads, wild blueberry yogurt, wild blueberry milkshakes, etc.

WILD BLUEBERRY RECIPES

Wild Blueberry Smoothies*

Ingredients

¼ cup Wild Blueberries
¼ cup Vanilla or Blueberry Yogurt
1 tablespoon Honey
3 Ice Cubes

Blend at high speed. Serve immediately. Serves 2.



Purple Cows*

Ingredients

1½ gallons Milk
13 ⅓ cups Wild Blueberries
3 tablespoons Sugar

Combine all ingredients in a blender and blend at high speed until smooth.

Yield: 30, 8-oz. servings

Teacher's Note: Some students may be lactose intolerant. If so, please suggest appropriate alternatives. Lactaid milk or soy milk may be used in place of regular milk. If available, soy yogurt may be used as a substitute for regular yogurt.

* Source: Wild Blueberry Association of North America

EVALUATION

1. Assess the accurate completion of the *Reading Nutrition Labels* activity sheet.

2. Have the students write an essay titled "The Health Benefits of Wild Blueberries." Ask them to include information beyond the nutritional benefits and grade accordingly.

3. Assign group grades for the wild blueberry

food projects with the emphasis on the nutrition labeling component.

4. Combine this activity with the advertising activity and include the projects in a portfolio assessment.

EXTENSIONS

1. Have the students read nutrition labels from a variety of other products. Compare these with what they have learned about wild blueberries.

2. Current research is reporting new discoveries such as nutraceuticals in foods. Have students research and write reports about the topic "Nutraceuticals," using the natural benefits of food to prevent or cure diseases, enhancing natural chemicals in foods for these benefits, etc. Information can be found on the Internet, nightly news reports, magazine articles, etc.

RESOURCES

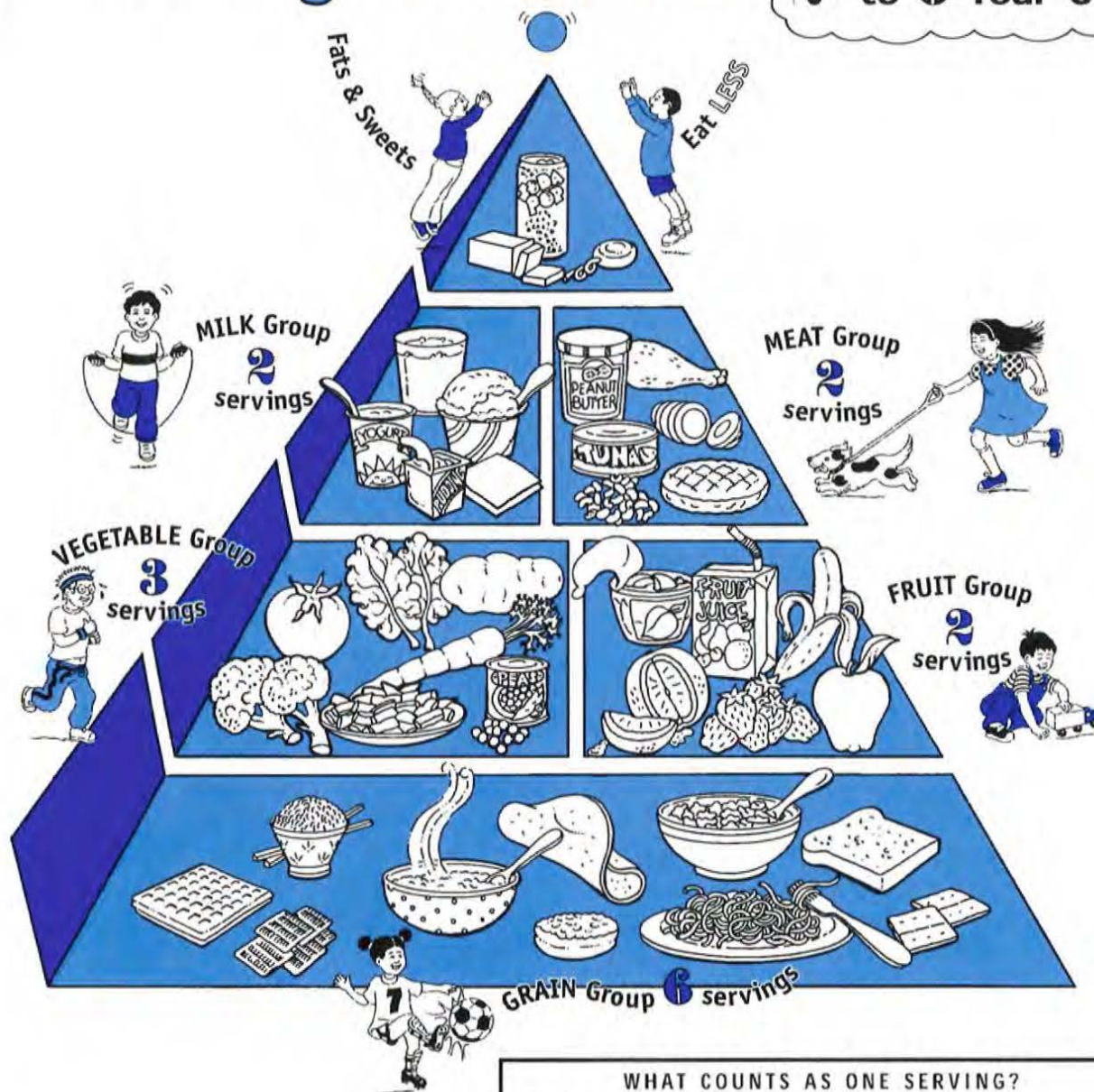
USDA Food Guide Pyramid and USDA Food Guide Pyramid for Young Children, Center for Nutritional Policy Promotion, United States Department of Agriculture. Washington, DC. www.usda.gov/cnpp/

NOTES:

FOOD GUIDE PYRAMID

for Young Children

A Daily Guide for
2- to 6-Year-Olds



FOOD IS FUN and learning about food is fun, too. Eating foods from the Food Guide Pyramid and being physically active will help you grow healthy and strong.

WHAT COUNTS AS ONE SERVING?

GRAIN GROUP

1 slice of bread
1/2 cup of cooked rice or pasta
1/2 cup of cooked cereal
1 ounce of ready-to-eat cereal

VEGETABLE GROUP

1/2 cup of chopped raw or cooked vegetables
1 cup of raw leafy vegetables

FRUIT GROUP

1 piece of fruit or melon wedge
1/2 cup of juice
1/2 cup of canned fruit
1/2 cup of dried fruit

MILK GROUP

1 cup of milk or yogurt
2 ounces of cheese

MEAT GROUP

2 to 3 ounces of cooked lean meat, poultry, or fish.
1/2 cup of cooked dry beans, or 1 egg counts as 1 ounce of lean meat. 2 tablespoons of peanut butter count as 1 ounce of meat.

FATS AND SWEETS

Limit calories from these.

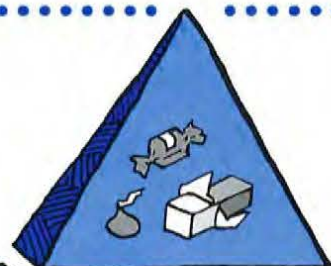
Four- to 6-year-olds can eat these serving sizes. Offer 2- to 3-year-olds less, except for milk.
Two- to 6-year-old children need a total of 2 servings from the milk group each day.



FOOD GUIDE PYRAMID

A Guide to Daily Food Choices

Fats, Oils & Sweets
USE SPARINGLY



Milk, Yogurt
& Cheese Group
2-3 SERVINGS



Meat, Poultry, Fish,
Dry Beans, Eggs
& Nuts Group
2-3 SERVINGS

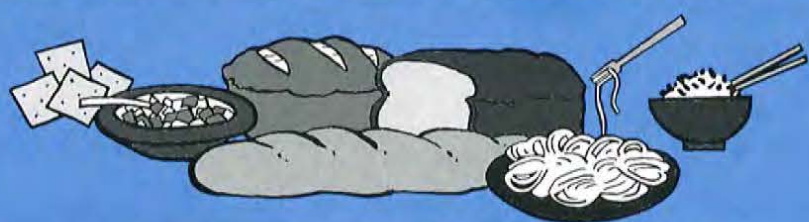


Vegetable
Group
3-5
SERVINGS



Fruit
Group
2-4 SERVINGS*

Bread, Cereal,
Rice & Pasta
Group
6-11
SERVINGS



*½ cup of fresh or frozen Maine wild blueberries is equal to 1 serving from the fruit group.



NUTRITIONAL INFORMATION

CARBOHYDRATES

Carbohydrates are sugars, starches, and fibers. They are found in foods made from grains such as bread, pasta, cereal, muffins, and pancakes. They are also found in starchy vegetables such as potatoes, sweet corn, popcorn, peas, and lima beans. Sweet foods and candy contain carbohydrates in the form of sugar. Soft drinks and sweetened drinks also contain carbohydrates. Look for corn syrup and dextrose on food labels, if sugar is not listed. These are two common sweeteners.

Carbohydrates give us energy to run, walk, work, think, and provide for general body operations such as breathing. Whole grain products give us B vitamins. Many foods that contain carbohydrates also give us fiber. Human bodies need fiber to move food efficiently through the digestive system. Unlike grazing animals, humans cannot digest much fiber.



PROTEINS

Proteins are found in both plant and animal products. They are found in meat, milk, dairy products, eggs, beans, peanuts, soybeans, nuts, and in grains such as oats. Animal sources of protein are complete protein while plant sources of protein are incomplete and need to be balanced by combining several plant sources.

Proteins are needed to build muscle, nerves, brain tissue, blood, and bone. Proteins are needed for growth and pregnancy.

VITAMINS

Vitamins are needed in small amounts to keep body systems healthy and working well. Each vitamin has specific functions. For example, vitamin C keeps mucous membranes healthy. Vitamin D is needed to absorb calcium and phosphorous to build and maintain strong bones and teeth.

Vitamins are either water-soluble (dissolve in water) or fat-soluble (dissolve in fat). The water-soluble vitamins are C and the B complex (niacin, riboflavin, thiamin, etc.). The fat-soluble vitamins are A, D, E, and K. Vitamins are found in fresh fruits and vegetables, grains, meat, poultry, fish, eggs, dairy foods, dry beans and nuts. One of the reasons eating a variety of foods is recommended is to get all of the vitamins needed to remain healthy.

MINERALS

Minerals are needed for a wide variety of body structures and functions. Calcium and phosphorous are used to build and maintain strong bones and teeth. They are also needed by the body to transmit nerve signals and release energy from foods. Iron is needed to build red blood cells that carry oxygen. Potassium is vital to keep the heart pumping and for transmitting nerve signals. Sodium and chlorine are needed to transmit nerve signals. They are important in sweating that cools the body, and they keep the blood slightly salty for proper function.

Minerals are found in both plant and animal sources. Calcium and phosphorous are found in dairy products, dark green vegetables, and grains. Sodium and chlorine are in table salt and in processed foods containing added salt. Potassium is found in wild blueberries, melons, and bananas. Seafoods give us iodine. Iodine is needed by the thyroid gland to create the hormones that control growth and metabolism. Iron can be found in liver, beef, spinach, and other dark green vegetables.

FATS AND OILS

Fats and oils are also known as lipids. They provide energy, lubricate joints, are used to create hormones, and are needed to absorb and transport fat-soluble vitamins. Fats and oils give two and a half times the amount of energy as the same amount of carbohydrates. The body stores energy as fat. Fats are found in animal products. Oils and some fats are found in plant products.



Name _____

READING NUTRITION LABELS

Read the nutrition label and answer the questions below.

1. What percentage of the recommended daily allowance of vitamin C does one cup of wild blueberries provide?

2. How much dietary fiber is there in one serving of wild blueberries?

3. List five items that wild blueberries do not contain (zero amounts).

4. What three minerals do wild blueberries provide for your diet?

Nutrition Facts

Serving Size: 5 ounces or 140g
(1 cup) of Wild Blueberries

Amount per serving

Calories 80 Calories from fat 0

% Daily Value*

Total Fat 0g **0%**

Saturated Fat 0 g

Polyunsaturated 0 g

Monounsaturated 0 g **0%**

Cholesterol 0 mg **0%**

Sodium 0 mg **0%**

Potassium 85 mg **2%**

Total Carbohydrate 18 g **6%**

Dietary Fiber 4 g **17%**

Sugars 13 g

Protein less than 1 g

Vitamin A 0% • Vitamin C 14% • Calcium 2% • Iron 0%
Magnesium 2% • Thiamine 0% • Riboflavin 0% • Niacin 0%

*Percent Daily Values are based on a 2,000 calorie diet.

5. How many calories are there in a cup of wild blueberries? Where does this energy come from?

Name _____ **ANSWER KEY**

READING NUTRITION LABELS

Read the nutrition label and answer the questions below.

1. What percentage of the recommended daily allowance of vitamin C does one cup of wild blueberries provide?

14%

2. How much dietary fiber is there in one serving of wild blueberries?

4 grams or 17% daily value

3. List five items that wild blueberries do not contain (zero amounts).

Fat Sodium Cholesterol Riboflavin Iron	Vitamin A Thiamin Niacin Calories from fat
---	---

4. What three minerals do wild blueberries provide for your diet?

Calcium
Potassium
Magnesium

5. How many calories are there in a cup of wild blueberries? Where does this energy come from?

80 Calories **Carbohydrates**

Nutrition Facts

Serving Size: 5 ounces or 140g
(1 cup) of Wild Blueberries

Amount per serving

Calories 80 Calories from fat 0

% Daily Value*

Total Fat 0g **0%**

Saturated Fat 0 g

Polyunsaturated 0 g

Monounsaturated 0 g **0%**

Cholesterol 0 mg **0%**

Sodium 0 mg **0%**

Potassium 85 mg **2%**

Total Carbohydrate 18 g **6%**

Dietary Fiber 4 g **17%**

Sugars 13 g

Protein less than 1 g

Vitamin A 0% • Vitamin C 14% • Calcium 2% • Iron 0%
Magnesium 2% • Thiamine 0% • Riboflavin 0% • Niacin 0%

*Percent Daily Values are based on a 2,000 calorie diet.

WILD BLUEBERRY HISTORY AND GEOGRAPHY



BRIEF DESCRIPTION

The students will explore the impact of wild blueberries on the history and culture of several human populations as well as map the geography. An example of civics in action will be addressed in the story of Megan Frank.

STATE OF MAINE LEARNING RESULTS

Subject	Section	Grades 3-4	Grades 5-8
Social Studies — History	A	2	1, 2
	B		1
Geography	A	1	2
	B	3	3
Civics	A	3	1, 3
Economics	B	2	3
	D	1	2, 3
English Language Arts	A	5	8
	B	1	11
	C	1	2
	D	3, 4	6, 7
	E	3	2
	G	1, 4	3, 5, 7
	H	1, 2, 5	3, 6

OBJECTIVES:

The students will:

1. map the areas of Maine where wild blueberries grow.
2. research and write about the uses of wild blueberries (and other fruits indigenous to North America) by the Native Americans.
3. assume the identity of Megan Frank and write their own letter asking that the wild blueberry be declared Maine's official berry, or create a wild blueberry product as an official symbol for Maine.

LIFE SKILLS:

Interpreting information, library skills, mapping, research, writing to persuade

MATERIALS:

- Map of Maine - a state road map that has towns and cities
- Copies of the map of Maine, one per student
- Paper and pens or pencils
- Library references about Native Americans

ESTIMATED TEACHING TIME:

Three 45-minute class periods, plus time for research

PREPARATION:

- Make copies of the state of Maine map.
- Obtain and make copies of the materials listed.
- Arrange to visit the library or have reference material available.

VOCABULARY:

As the students conduct their research, make a list of unfamiliar terms and define each.

BACKGROUND



For centuries, wild blueberries have played a role in the lives and traditions of Maine's many different cultures. Native Americans, such as the Passamaquoddy, Penobscot, Abenaki, Mic Mac, Maliseet, and Wabanaki, used wild blueberries in many ways. In Maine, Native Americans ate fresh wild blueberries late in the summer and preserved them for winter food. They dried the berries

whole. These dried berries were crushed and cooked (without sugar) to make little cakes, which they laid on birch bark to dry in the sun. The cakes were stored in birch bark mukoks. Dried blueberries were used as a seasoning for soups and stews. They were also used to cure meat.

A pungent wild blueberry tea was prized for its healing powers. Wild blueberry juice was used as a dye for splint baskets, giving them a lovely reddish-pink color. Blueberry juice and syrup were served as a cough remedy.

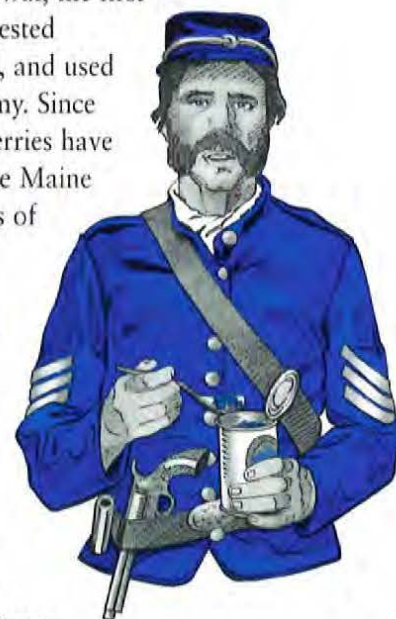


Many Native American tribes along the Northeast Coast believed that the wild blueberry had magical powers. Atop each wild blueberry is the base of its earlier flower in the shape of a five-pointed star.

Various legends have it that during a time of starvation, the Great Spirit sent these "star berries" down from the heavens to relieve the hunger of his children.

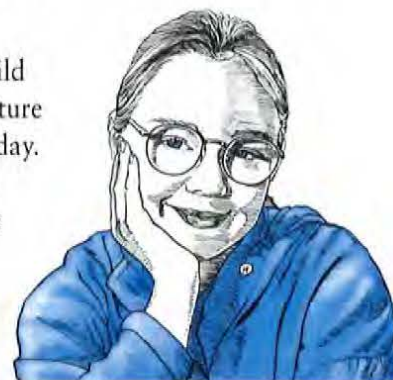
Centuries before the first settlers came to Maine, the wild blueberry barrens were being burned by the Native Americans to encourage growth of new bushes. When the settlers arrived, the Native Americans showed them how to care for the wild blueberry barrens and taught them the many uses for the wild blueberries. During wild blueberry season, seventeenth century colonial homes served wild blueberry dishes that were titled Grunt, Slump, Buckle, and Fool.

During the Civil War, the first blueberries were harvested commercially, canned, and used to feed the Union Army. Since that time, wild blueberries have been a mainstay of the Maine economy. Generations of school teachers, high school students, families, loggers, and Native Americans return to the barrens every year along with people from all over the world for a working vacation at blueberry harvest time. In addition to independent growers, there are many companies that harvest and process wild blueberries. The oldest dates



back to 1874, and the fourth generation is actively involved in the management of the company. The wild blueberry rake is also "still in the family." The rake, first developed in the late 1800s, is unchanged today. The grandson of the original inventor now runs the company that has been manufacturing rakes since 1910. Other companies have made changes to the rake and manufacture different versions.

The impact of the wild blueberry on Maine's culture continues to the present day. In 1990, the Maine wild blueberry was named the official berry of the state, thanks to the efforts of Megan Frank of Manchester, Maine – then a fifth grader. Megan began her efforts in second grade by writing a letter to her state legislator suggesting that the Maine wild blueberry be named the official state berry. She first got the idea by hearing in school about the important role wild blueberries have played in the history, economy, and culture of Maine for over 200 years.



**INTRODUCTION**

1. Ask the students:

"Where do wild blueberries grow?"

(While they grow all over the state, this activity concerns mapping the major production areas.)

2. Indicate that today they will find the major production areas in Maine.

ACTIVITY ONE

1. Hand out copies of the map of the state of Maine or, for older students, the regional map that includes the Canadian provinces.

2. Have the students color in the areas where the majority of wild blueberry producers are concentrated. According to the Economic Research Service (ERS) of the United States Department of Agriculture (USDA), the counties that produce wild blueberries are, in order of production: Washington, Hancock, Knox, Waldo, Lincoln, Oxford, Androscoggin, Kennebec, Piscataquis, York, and Cumberland. The areas outside of Maine that produce wild blueberries are Nova Scotia, New Brunswick, Prince Edward Island, Quebec, and Newfoundland.

3. To reflect the fact that wild blueberries do grow all over the state, another color may be used. Color in all other counties as long as the appropriate key is made for each color.

ACTIVITY TWO

1. Present the appropriate information concerning the use of wild blueberries by the Native Americans, settlers, Civil War soldiers, etc.

2. Have the students select one of these Native American groups – Passamaquoddy, Penobscot, Abenaki, Mic Mac, Maliseet, or Wabanaki – and research its use of this wild fruit and others. If possible, oral histories could be taken. Ask the student to write a report, including the sources of their information.

ACTIVITY THREE

1. Read the section of the supporting information about Megan Frank to the class.
2. Have the students assume the identity of Megan Frank (or a student her age) and write their own letter to their state legislator asking that the wild blueberry become Maine's official berry; or have them use another wild blueberry product that can be made into a symbol. Have the students include reasons why this should be done, based upon the wild blueberry's importance to Maine's history, economy, and culture. Remind them that the purpose of the letter is to persuade. Also, you may want to inform them that fourth grade students in Syracuse, New York, convinced the legislature to adopt a state muffin – the apple muffin – because New York is an apple-producing state.
3. Discuss what they could do if the letter campaign fails (*petitions, news stories, editorials, enlisting others to write, etc.*).

EXTENSIONS

1. Have the students weave baskets and dye them with crushed wild blueberry juice. (Frozen wild blueberries can be obtained year-round in grocery stores.)
2. Have the students conduct an Internet search to locate other important historical, geographic, or cultural information about wild blueberries.
3. Have the students map the other areas where wild blueberries and cultivated blueberries are grown.
4. Have the students search the Internet to learn if other students have influenced legislation.

EVALUATION

1. Assess the students' written work, quality of research, inclusion of information sources, etc.
2. Assess the students' letters and persuasive ability to accomplish their mission.
3. Quiz the students on where wild blueberries are grown, geographically, in Maine.

**RESOURCES****NATIVE AMERICAN INFORMATION**

1. Caduto, Michael J., and Joseph Bruchac. *Keepers of the Earth: Native American Stories and Environmental Activities for Children*. Colorado: Fulcrum Printing, 1989.
2. Museums that provide exhibits and information about Native Americans can be found at <http://www.mainemuseums.org>

BLUEBERRY INFORMATION

3. Wild Blueberry Association of North America – <http://www.wildblueberries.com>

4. Elizabeth White and Historic Whitesbog – <http://www.whitesbog.org/elizabethwhite2.html>

5. Whitesbog Preservation Trust's Youth Activities – <http://www.whitesbog.org/onlinefun.html>

MAPS AND GEOGRAPHIC INFORMATION

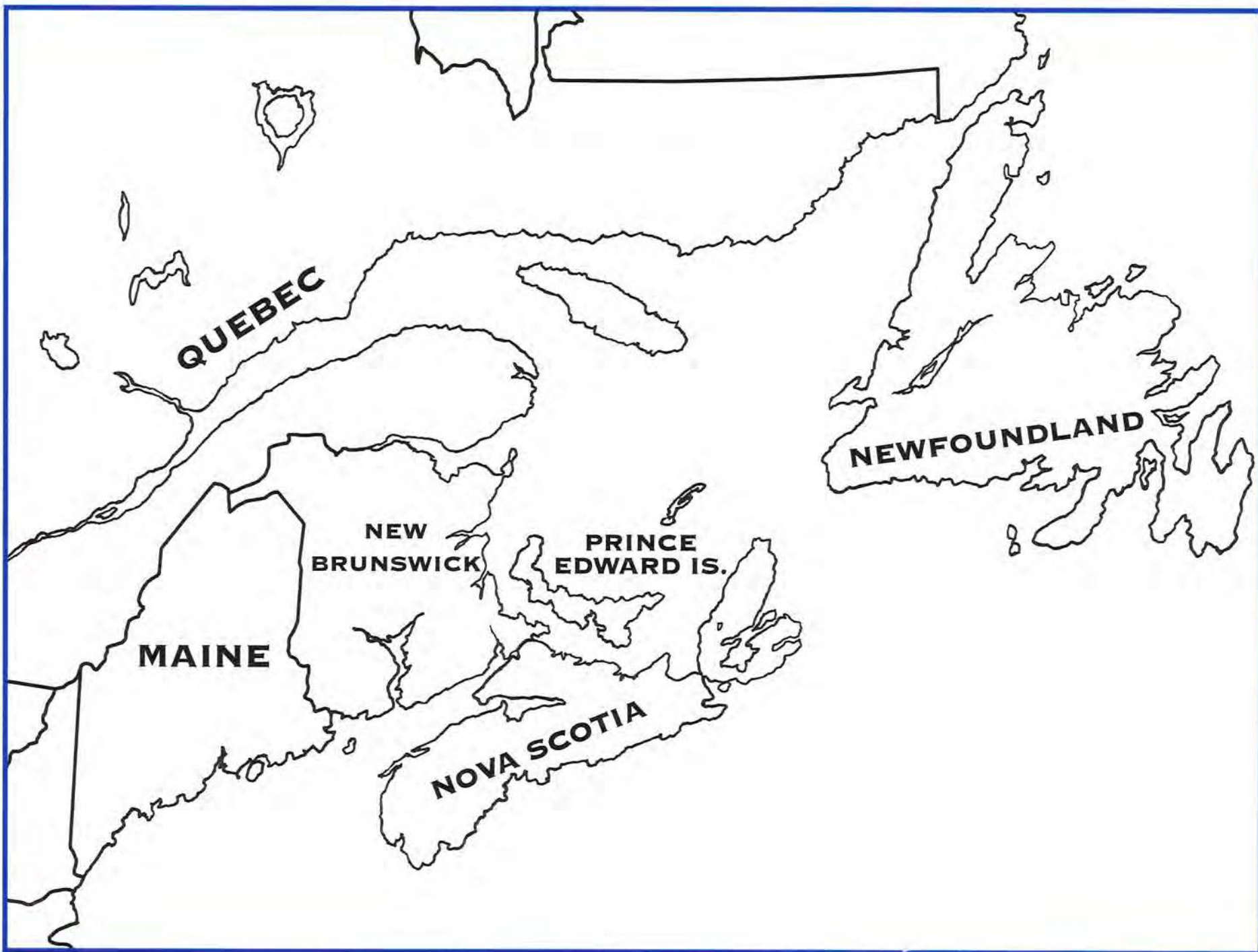
6. Maps of Maine that include county boundaries can be found at <http://www.lib.Virginia.edu/gic/maps/states/> and <http://www.ohwy.com/ME/m/mecounty.htm>
7. Teaching Kits and K – 12 Educational Services. Smith Center for Cartographic Education, Osher Map Library. <http://www.usm.maine.edu/maps/education.html>

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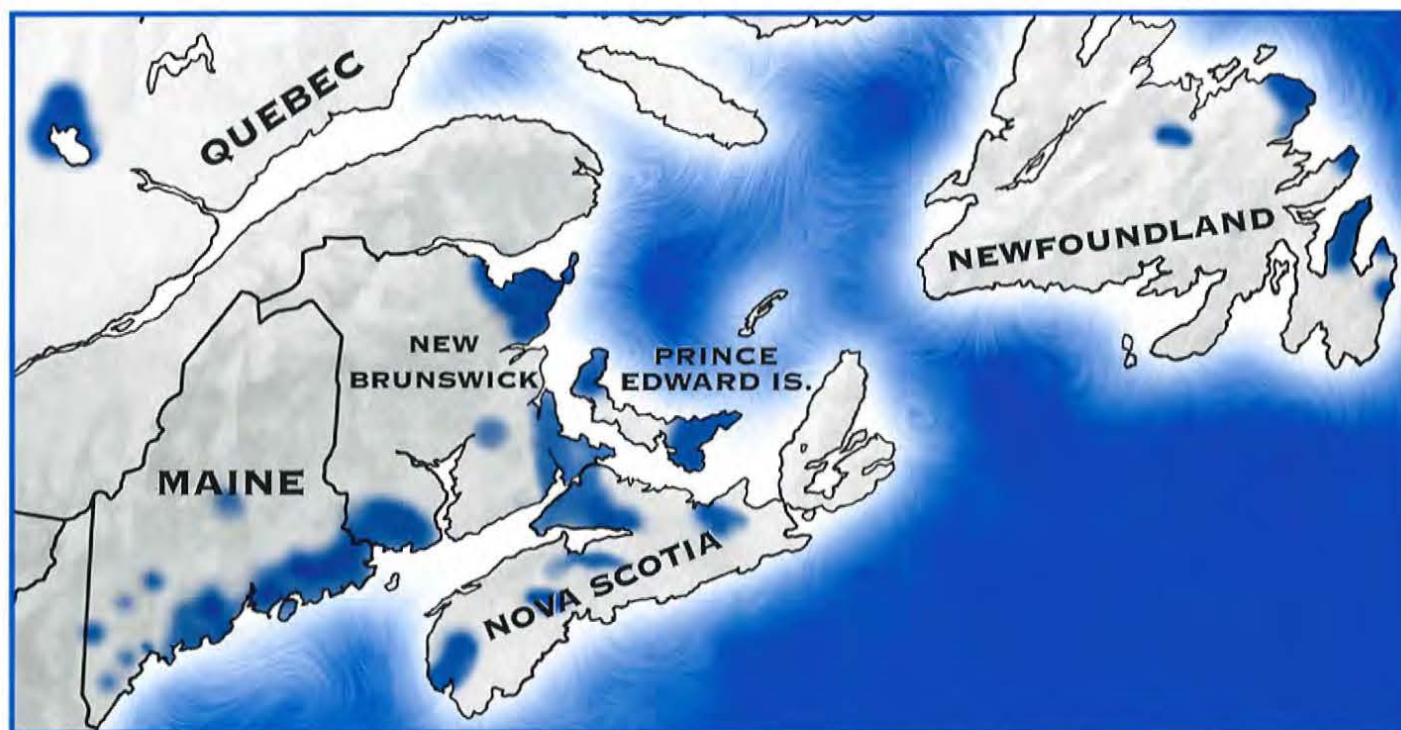
NOTES:

MAP OF MAINE

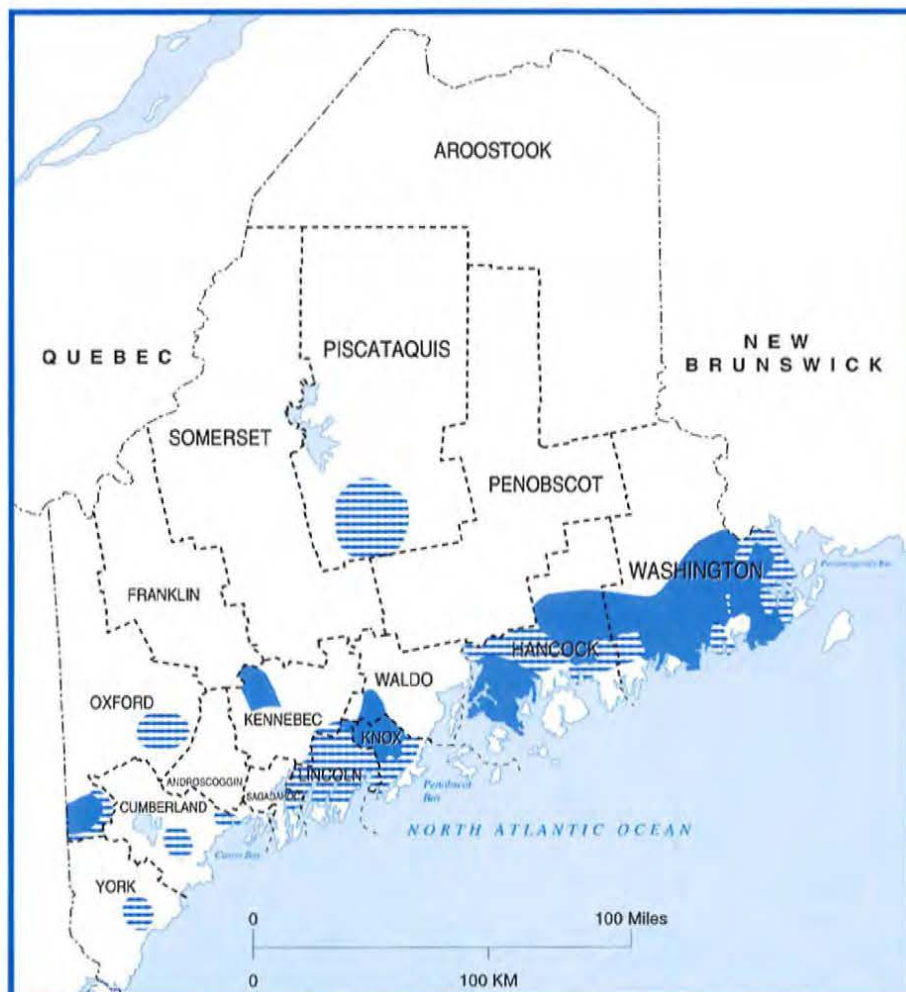
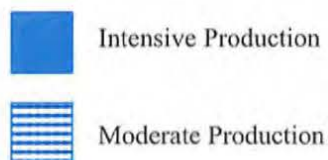


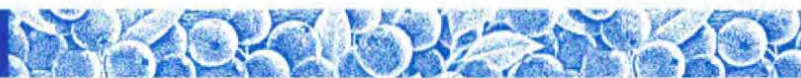


MAP OF WILD BLUEBERRY REGIONS



MAINE DISTRIBUTION OF BLUEBERRY PRODUCTION



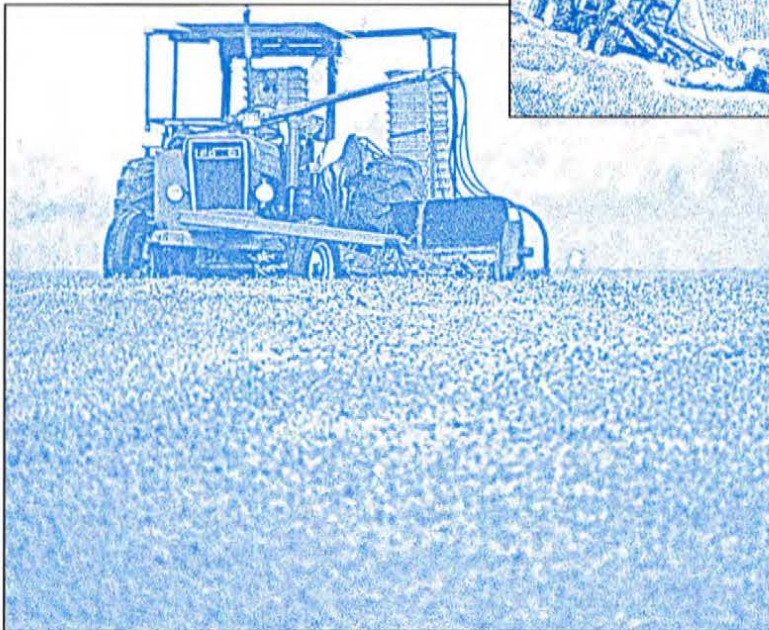
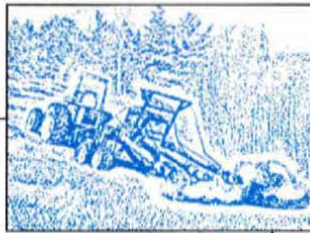


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NOTES:

WILD BLUEBERRY MATH

Burning the fields



Mechanical wild blueberry harvesting

BRIEF DESCRIPTION

The students will examine, interpret and manipulate real-life data about the economics of wild blueberry production.

STATE OF MAINE LEARNING RESULTS

Subject	Section	Grades 3-4	Grades 5-8
Mathematics	A	3	4
	B	1	1
	C	1, 2	3
	G	1	1, 2
	K	1	2
Social Studies – Economics	A	2	1, 2, 3
	B	1, 2	1, 2, 3
	D	1	2, 3
Health and Physical Education	F	1	2, 4
Career Preparation	A	3, 4	

OBJECTIVES:

The students will:

1. read and interpret graphs depicting real-world data.
2. create graphs using real-world data.
3. manipulate real-world information to solve problems and understand some of the decision-making challenges of producing wild blueberries.
4. formulate and answer questions from real-world data.

LIFE SKILLS:

Displaying data, graphing, graph reading, mathematics, problem solving

MATERIALS:

- Copies of *Wild Blueberry Production Decisions*
- Copies of *The Annual Blueberry Crop*
- Copies of *Wild Blueberry Production*
- Graph paper
- Pens or pencils
- Calculators, if desired

ESTIMATED TEACHING TIME:

Three 45-minute class periods

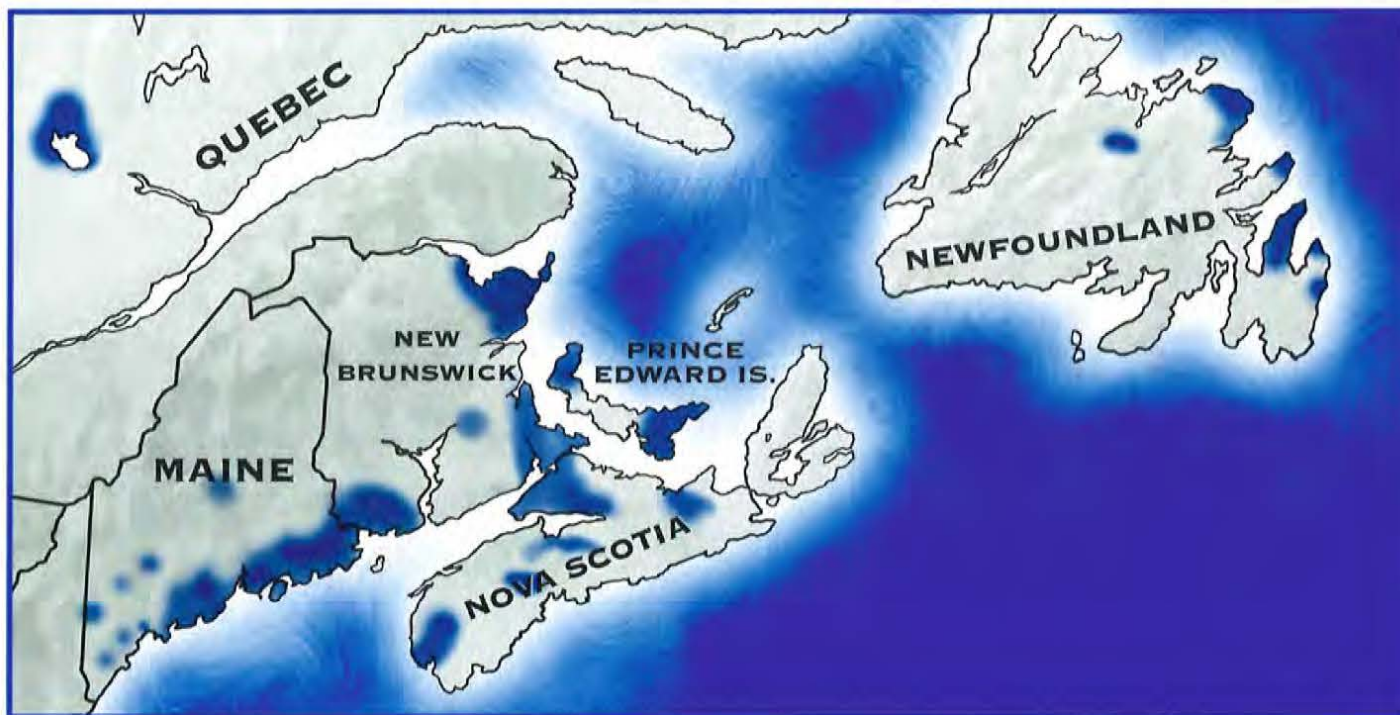
PREPARATION:

Make copies of the student activity pages.

VOCABULARY:

Annual, clone, data, litter, production, pruning

BACKGROUND



Maine is the largest producer of wild blueberries in the world. Production in Maine has exceeded the production of cultivated blueberries in Michigan. Maine produces 25 percent of all blueberries in North America, including wild and cultivated production. Twenty-five percent of the total crop is produced in the Canadian provinces of Nova Scotia, Quebec, New Brunswick, Prince Edward Island and Newfoundland. The remaining 50 percent of the blueberries are cultivated blueberries grown in Michigan, New Jersey, British Columbia, Washington, Oregon, Georgia, Arkansas and other states. Wild blueberries contributed over 80 million dollars to Maine's economy last year.

Wild blueberries grow all over the state of Maine, but are grown commercially on 60,000 acres. Due to pruning practices, only half of the acreage produces fruit each year. This does not mean that there is a wild blueberry crop every other year. The fields that produce and those that are regrowing are rotated. At any given time, half of the acreage is producing wild blueberries and the other half is regrowing after the previous fall's pruning.

Most of the wild blueberry crop is processed following harvest. Less than one percent of the crop is sold fresh. There are four grower cooperatives that sell wild blueberries to processors. Seven companies operate processing plants that freeze blueberries in Maine. These plants may also can or dry wild blueberries. There is also one fresh-pack/frozen cooperative. Currently, 99 percent of all wild blueberries are frozen, but five to ten percent of those berries are canned after harvest.



Each year wild blueberry producers must make decisions about their crop fields. Out of necessity, these decisions are often influenced by economics. If growers cannot make a profit raising their crops, they cannot stay in business. Growers decide how and when to prune, what

Integrated Crop Management (ICM) practices to use, how to protect their crops from insects and diseases, when and if to spray crop-protecting chemicals, how much to fertilize and how to market their crops. The following activities demonstrate a few of these growers' decisions. They also depict the importance of Maine's wild blueberry production to Maine's economy and to the worldwide market.



INTRODUCTION

1. Ask the students if they know how important Maine's wild blueberry production is to the state's economy and to the total production of wild blueberries. (*Wild blueberries contributed over 80 million dollars to Maine's economy last year.*)
2. Indicate that this lesson will explore that information.

ACTIVITY ONE

FOR OLDER STUDENTS

1. Hand out copies of *Wild Blueberry Production Decisions* and have the students complete the activities. If students need a hint for question #4, tell them that they need to divide the square footage needed for one clone into the square footage in an acre. This process needs to be done twice, once at the low end of the range (75 square feet per clone) and once at the high end of the range (250 square feet per clone). This will provide their range of clones per acre.
2. Discuss the decision-making process that a grower must follow for each decision.

ACTIVITY TWO

1. Hand out copies of *The Annual Blueberry Crop* and have the students answer the questions.
2. Discuss the importance of Maine's wild blueberry production to the state's economy and to the world's wild blueberry consumers.
3. Introduce the new research concerning the health benefits of wild blueberries. Ask the students to speculate about the impact that this news will have on the demand for Maine wild blueberries. (*Demand is increasing due to these scientific discoveries.*)

ACTIVITY THREE

1. Hand out copies of *Wild Blueberry Production* and have the students complete the activities.
2. Discuss the impact that Maine's production of wild blueberries has on total wild blueberry production and supply.

3. Have the students calculate the annual wild blueberry production of all Canadian provinces and compare it to Maine's. (*80 million pounds is just about $\frac{1}{4}$ of Maine's production.*)

EXTENSIONS

1. An additional graphing problem that involves multiplying percentages may be used: 99 percent of all wild blueberries are frozen, but five to ten percent of those berries are canned after harvest. Less than one percent of the crop is sold fresh. (*This could be depicted in a split bar graph.*)
2. Find the price per pound that wild blueberry growers are paid by going on the Internet to the New England Agricultural Statistics Service at <http://www.usda.gov/nass> and calculate wild blueberry grower gross revenue per year. Have the students calculate those figures for the past five years and graph the results.
3. Have the students search for the most up-to-date information on the Internet using the Web sites listed or looking at the Maine Department of Agriculture Web site.

EVALUATION

Evaluate the accuracy of questions answered and graphs produced from the activities in this lesson.

RESOURCES

1. United States Department of Agriculture (USDA), National Agricultural Statistics Service (NASS), <http://www.usda.gov/nass>
2. Jasper Wyman & Son of Milbridge, ME, <http://www.wymans.com>
3. North American Blueberry Council, <http://www.blueberry.org>
4. Wild Blueberry Association of North America, <http://www.wildblueberries.com>
5. University of Maine Wild Blueberry site, <http://www.wildblueberry.maine.edu>
6. Maine Department of Agriculture, <http://www.mainefoodandfarms.com>



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NOTES:

Name _____

WILD BLUEBERRY PRODUCTION DECISIONS



Mowing

Wild blueberry growers need to prune their fields every other year to produce good quality, bountiful crops. Pruning is an essential part of many types of fruit production. Growers can use one of two techniques: burning or mowing. This table gives the cost to prune one acre of wild blueberries using these different techniques. Use this information to complete the instructions below.



Burning

Pruning Techniques	••••• Farm Size in Acres •••••		
	10 Acres (avg. cost per acre)	100 Acres (avg. cost per acre)	1000 Acres (avg. cost per acre)
Burning with Straw	\$179.98	\$111.20	\$102.79
Burning with Oil	\$230.87	\$90.19	\$74.92
Flail Mowing	\$34.77	\$16.40	\$16.16

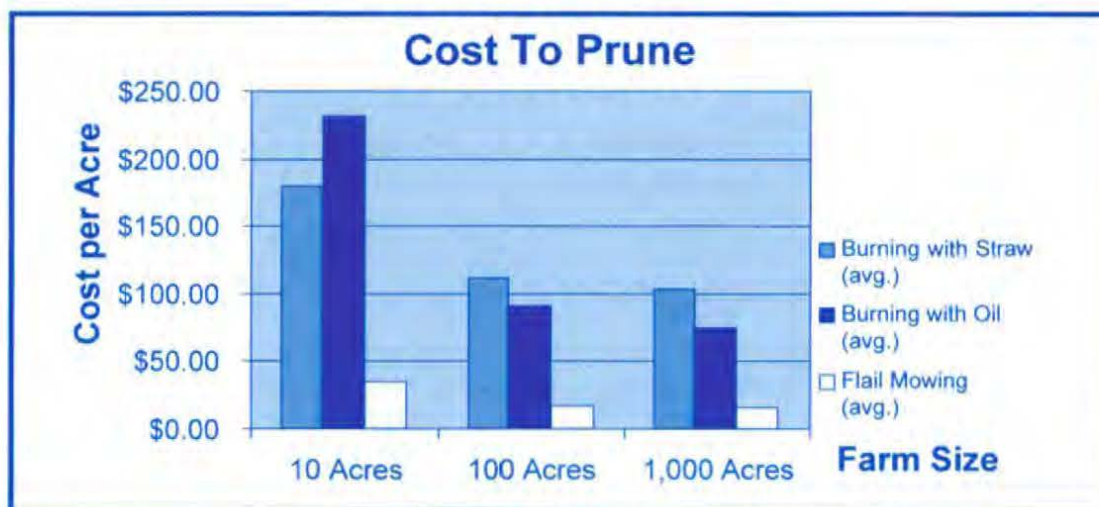
- On your own paper, graph the costs for each of these types of pruning techniques. Create a separate graph or separate grouping on the graph for each farm size.
- It is clearly much less costly to mow than it is to burn. So, why would a producer choose the more costly burning option? Burning can reduce diseases and insect pests that may linger or grow in the litter left from mowing. A disease or insect outbreak may require spraying to prevent crop loss. If it costs the grower an additional \$75.00 per acre to spray, which would be the most economical decision for each farm size?
- In the same scenario as #2, in addition to the extra cost to spray, the production is reduced, meaning that each acre produces fewer wild blueberries to sell. Therefore, this results in a further loss in income to the grower of \$125.00 per acre if burning is not chosen. What is the best pruning option now for each farm size?
- From one wild blueberry plant, underground rhizomes produce new plants that are identical to the original plant. The parent plant and all of the plants created from its rhizomes are known as a clone. One clone will cover 75 to 250 square feet depending upon age. An acre of land is 43,560 square feet (about the size of a football field). How many different clones might one acre have? Give a range.

Name _____ **ANSWER KEY**

WILD BLUEBERRY PRODUCTION DECISIONS

Wild blueberry growers need to prune their fields every other year to produce good quality, bountiful crops. Pruning is an essential part of many types of fruit production. Growers can use one of two techniques: burning or mowing. This table gives the cost to prune one acre of wild blueberries using these different techniques. Use this information to complete the instructions below.

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- On your own paper, graph the costs for each of these types of pruning techniques. Create a separate graph or separate grouping on the graph for each farm size.
- It is clearly much less costly to mow than it is to burn. So, why would a producer choose the more costly burning option? Burning can reduce diseases and insect pests that may linger or grow in the litter left from mowing. A disease or insect outbreak may require spraying to prevent crop loss. If it costs the grower an additional \$75.00 per acre to spray, which would be the best economical decision for each farm size?

10 Acres – flail mowing
100 Acres – burning with oil
1,000 Acres – burning with oil
- In the same scenario as #2, in addition to the extra cost to spray, the production is reduced, meaning that each acre produces fewer wild blueberries to sell. Therefore, this results in a further loss in income to the grower of \$125.00 per acre if burning is not chosen. What is the best pruning option now for each farm size?

Burning with either straw or oil
- From one wild blueberry plant, underground rhizomes produce new plants that are identical to the original plant. The parent plant and all of the plants created from its rhizomes are known as a clone. One clone will cover 75 to 250 square feet depending upon age. An acre of land is 43,560 square feet (about the size of a football field). How many different clones might one acre have? Give a range.

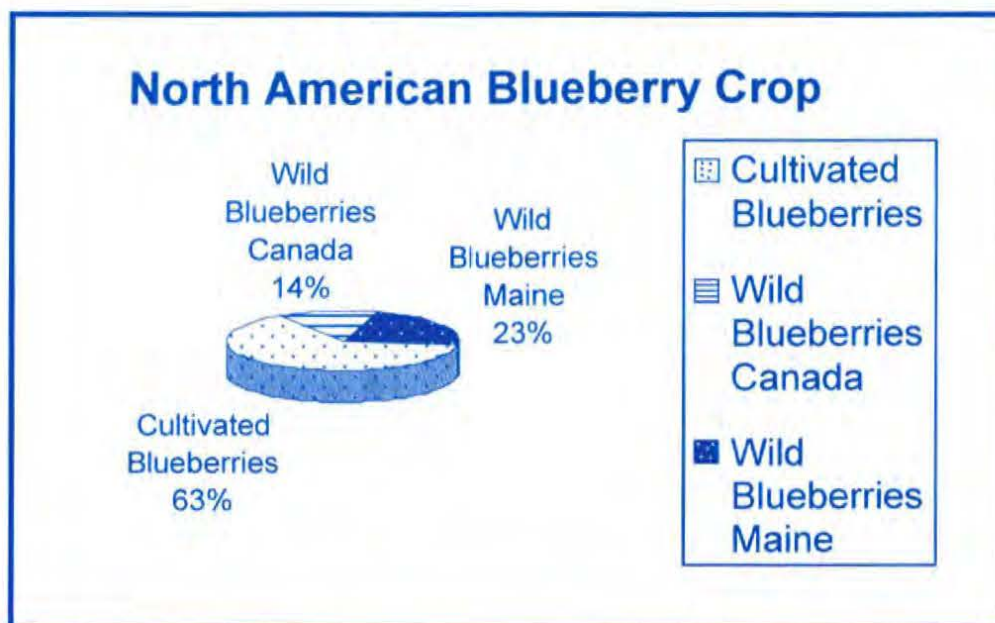
174 clones to 580 clones



Name _____

THE ANNUAL BLUEBERRY CROP

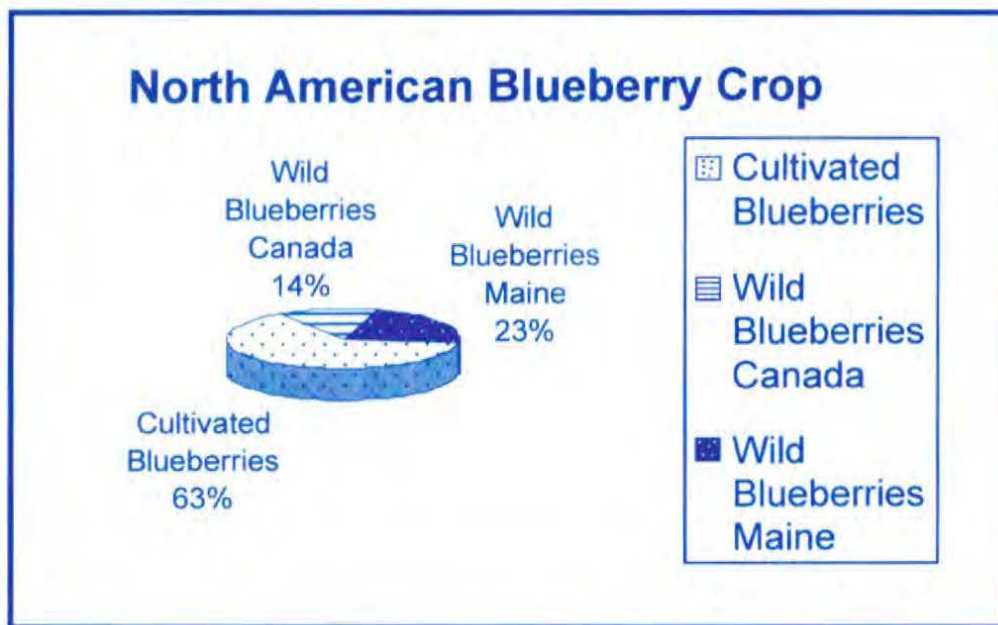
Read and interpret the information in this graph to answer the questions below.



1. What percent of the North American blueberry crop are cultivated blueberries?
2. What percent of the total North American blueberry crop do the wild blueberries grown in Maine represent?
3. What percent of the total North American blueberry crop do the wild blueberries grown in Canada represent?

Name ANSWER KEY**THE ANNUAL BLUEBERRY CROP**

Read and interpret the information in this graph to answer the questions below.



1. What percent of the North American blueberry crop are cultivated blueberries?

63%

2. What percent of the total North American blueberry crop do the wild blueberries grown in Maine represent?

23%

3. What percent of the total North American blueberry crop do the wild blueberries grown in Canada represent?

14%

Name _____

**WILD BLUEBERRY PRODUCTION**
North American

Wild Blueberry Crops	Millions of Pounds
Maine	111
New Brunswick	15
Nova Scotia	42
Newfoundland	1
Prince Edward Island	4
Quebec	18



1. What is the total production of wild blueberries in North America?
2. Graph the data presented in the chart above.



3. How many more pounds of wild blueberries does Maine produce than each Canadian Province?

Name ANSWER KEY**WILD BLUEBERRY PRODUCTION****North American**

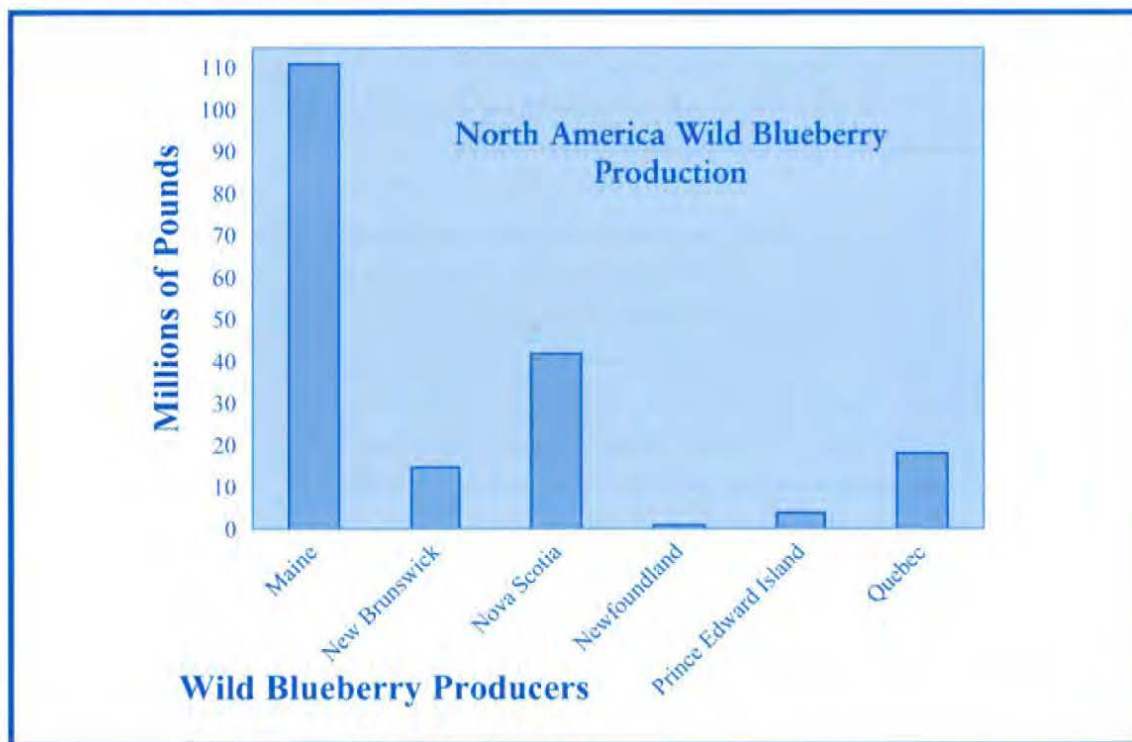
Wild Blueberry Crops	Millions of Pounds
Maine	111
New Brunswick	15
Nova Scotia	42
Newfoundland	1
Prince Edward Island	4
Quebec	18



1. What is the total production of wild blueberries in North America?

191 million pounds

2. Graph the data presented in the chart above.



3. How many more pounds of wild blueberries does Maine produce than each Canadian Province?

New Brunswick	-	96 million pounds
Nova Scotia	-	69 million pounds
Newfoundland	-	110 million pounds
Prince Edward Island	-	107 million pounds
Quebec	-	93 million pounds

WILD BLUEBERRY COMMISSION OF MAINE
FINANCIAL SUMMARY

Period End	Dec-04	Dec-03	Dec-02	Dec-01	Jun-00	Jun-99	Jun-98	Jun-97	Jun-96	Jun-95
Expenditures										
Promotion		672,390	872,688	794,150	530,585	537,776	575,219			
Promotion and Education	935,166									
Research and Technology	176,147	107,777	81,650	57,620	79,450	101,772	78,661			
Commission Programs		32,039	48,540	205,070	81,593	77,235	6,709			
Program Grants		5,500	6,000	5,300	5,850	4,500	4,800			
Commission Operations	175,432	165,837	146,720	216,383	134,932	134,058	136,114			
Capital Outlays	1,100									
Salaries and Wages								53,644	48,925	37,199
Health Benefits								9,294	7,761	2,367
Retirements								9,629	8,754	7,687
Other Fringe Benefits								912	838	659
Other Contract Ser. State								6,679	8,339	27,105
Other Contract Services								6,982	4,992	7,992
Commodities								18,745	10,688	3,674
Grants, Subsidies, Pension								596,033	617,243	791,604
Transfer to Other Funds								3,003	2,405	2,794
Total Expenditures	\$1,287,845	\$983,543	\$1,155,598	\$1,278,523	\$832,410	\$855,341	\$801,503	\$704,921	\$709,945	\$881,081

It's the air.

It's the ocean.

It's the northern
nights and sunny days.

It's the soil.

It's the rain.

It's simply Nature's way of producing
the best blueberries on earth.

Wild Blueberries from Downeast Maine
and Eastern Canada.



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www.wildblueberries.com

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