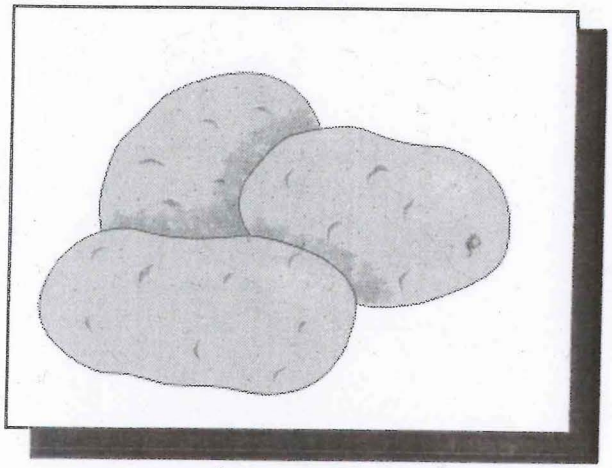
ALASKA GROWN RUSSET POTATOES

Alaska Consumers Say "Thumbs Up"



Carol E. Lewis
Professor of Resources Management

Pat Holloway
Associate Professor of Horticulture

Sharon Tavernier
Senior Thesis Researcher
B.S. Degree in Natural Resources Management

Agricultural and Forestry Experiment Station
University of Alaska Fairbanks

Misc. Pub. 99–4 February 1999

TASTE IS IMPORTANT

We are often asked, "What food products can be produced in Alaska?" More often we are hearing "How do Alaska food products taste and do consumers want to buy them?" Scientists at the Agricultural and Forestry Experiment Station have been answering that question since 1990. We test the appearance, texture, flavor, and consumer acceptance of Alaskan food products.

Production of plants and domestication of animals were most important to the ancient world's first farmers. Flavor played a role in what was eaten, however. The search for spices opened trade routes and resulted in discovery of continents.

The entire food supply chain includes more than just production. It extends to manufacturing, packaging, home processing, and serving. Early food choices were limited to local products. Developing processing technology and increasing globalization of communication and food distribution systems changed the profile of food choices. Taste and appearance became more important to increasingly better informed and discerning consumers worldwide.

Food production began in the early 1800s in Alaska. Russians in fur trapping and trading colonies in the southcentral and southeastern regions were Alaska's first farmers. Farming continued in the territory and state with assistance from the agricultural experiment stations celebrating 100 years of research in 1998. Food production was central to settlement and mining. A well–developed transportation system now allows Alaskans a wide variety of food choices and an equally well–developed communication system informs them about food products. Therefore, local products must not only be priced competitively, they must have a pleasing appearance and distinctive taste.

ALASKA GROWN RUSSET POTATOES: Alaska Consumers Say "Thumbs Up"

Shelikov recorded potato production by Russian settlers in Alaska in 1784. Potato variety trials have taken place at all agricultural experiment stations beginning in 1898 at the first experiment station in Sitka. The State of Alaska Division of Agriculture carries out potato variety testing at its Plant Materials Center near Palmer. The USDA Agricultural Research Service began a potato–breeding program in 1950 that ended in 1981 with the retirement of the lead scientist. The share of Alaska potatoes in the value of Alaska's farm products is increasing. At statehood (1960), potatoes comprised 16% ($560,000) of the total $3.5 million in farm product value. Quality of Alaska potatoes has been improving as has the share of farm product value. It peaked at 23% in 1992 and was 20% of the total $29.3 million ($5.9 million) in 1996.

Alaska vegetables have a higher sugar content than those produced in more temperate regions. Sugar content appears to be affected by storage temperatures and time in storage as well as cultivar. Alaska consumers have reacted negatively to the unattractive brown color typical when oils are used in preparation of potatoes at high cooking temperatures. This color results from the reaction between amine groups of free amino acids and reducing sugars. Baking, microwaving, or boiling does not appear to discolor the potatoes and the high sugar content may be a marketing attribute for those potatoes suited to these preparation techniques. Alaska consumers appear to want a potato that is produced in Alaska and has excellent baking or microwaving qualities. Russet varieties are known for these attributes and Alaska produced russets are increasingly being found in farmers' markets and supermarkets and in the industrial and military markets of Alaska. We wanted to know consumers' opinions when a russet variety was baked or microwaved after storage at different temperatures and for different lengths of time.

METHODS

We received 550 lbs. of Russet Norkotah potatoes in 1997 from Schoen Farms that had been planted in mid–May and harvested in early September. They were stored at 65°F for four weeks then 38°F for two weeks before delivery in mid–October. The Norkotahs were placed in three storage locations at the Fairbanks Agricultural Experiment Farm where the temperatures were 35°, 50°, and 70°F. They were distributed for testing after one week in storage. Thirty families were selected randomly from volunteers and divided into three groups. Each group was given potatoes from the same temperature treatment each week for eight weeks. They were instructed to bake or microwave the potatoes, taste them with no toppings, then complete a survey every week. The families evaluated the potatoes' flavor, appearance, and texture and told us if they liked the potatoes and would buy them. Chemical and mechanical tests were performed on all potatoes to determine percent moisture, specific gravity and sugar content at the end of each week in storage at each of the three temperatures.

RESULTS

Our panelists agreed that the Norkota Russets had brown, uniform skins and white to yellow colored flesh that was moist and creamy. They liked and would buy the potatoes no matter what the storage temperature or length of time in storage. Laboratory tests indicated the Norkotas became sweeter at lower temperatures and their density increased. There were no trends in percent moisture. None of the differences were significant for all temperatures and all weeks.

Panel Ratings of Attributes of the Norkota Russets:

Skin Appearance
The skins were brown and uniform. They became significantly more feathered and greener at higher temperatures as storage times increased. The skins were not yellow, gray, or mottled.

Skin Texture
At lower temperatures, the skins became tougher. They were crunchier as storage times increased. The skins were not soggy at any storage temperature or length of time in storage.

Flesh Appearance
The flesh was yellowest (but not objectionably) at 35°F but became whiter (less yellow) as storage time increased. Flesh was whitest at 50°F for all storage times. It never appeared gray, green, or orange and was uniform at all temperatures and storage times.

Flesh Texture
The flesh was moistest at 70° and 50°F for all storage times. Moisture decreased at 35°F as storage time increased. The flesh became significantly less creamy at 70°F as storage time increased. It was creamiest at 35°F and significantly so between 35° and 50°F. The texture was never soggy, doughy, chewy, or oily.

Flavor
The flavor was sweet and buttery. Sweetness decreased as storage temperature increased. The potatoes were slightly buttery when stored at 35°F. None of the differences were significant for any temperature or storage time.

For more detailed information about Alaska potatoes or any of the products we have tested please contact:

Agricultural and Forestry Experiment Station
309 O'Neill Building
University of Alaska Fairbanks
Fairbanks AK 99775

Telephone: (907) 474–5550 or 474–7188
Fax: (907) 474–6184
Email: fndls1@aurora.alaska.edu

This information is part of a senior thesis report completed by Sharon Tavernier as a part of the requirements for her B.S. in Natural Resources Management that she received in 1998. She thanks her committee as well as Grant Matheke (GBG), Kristi Long (Alaska Cooperative Extension), and her husband, Ron Tarvernier, for his never ending support. Both authors express their appreciation to all the volunteers who worked with us for two months to complete the consumer study.

THE 'ALASKA GROWN' PROGRAM

The colorful and easy to identify *Alaska Grown* logo was first used in 1986. It is frequently seen in advertisements, retail markets, food shows and farmers' markets around the state. It's a part of the *Alaska Grown* program that promotes quality Alaskan products.

The *Alaska Grown* program has two objectives.

❑ substitute locally produced for imported products.

❑ establish criteria to identify quality characteristics of Alaskan products.

Point–of–purchase posters and stickers help identify products that qualify for the *Alaska Grown* program. Specific quality characteristics of fresh and processed products produced in the state must be met. Quality attributes of fresh produce, for example, include appearance, condition, and other factors that influence eating quality.

The program works. Consumers are increasingly seeking products with the *Alaska Grown* logo. Each year, more producers qualify to participate. Farmers gain the market visibility of the *Alaska Grown* logo. Consumers have the assurance that they are purchasing a quality product, much as they would with an established brand name.

Positive consumer and producer response to the *Alaska Grown* program indicates the potential for an on–going, cooperative strategy, especially one that addresses consumer concerns and provides farmers with an opportunity for market entry.

Look for *Alaska Grown* when you shop!

SENSORY TESTING

The Agricultural and Forestry Experiment Station does not have controlled environment sensory laboratories. However, our producer and consumer clients wanted information about the taste and acceptability of Alaskan products. We devised a scientifically valid procedure adequate to satisfy their requests.

There are a number of ways to determine appearance, taste, texture, and consumer acceptability of food products. We chose to use untrained panels and focus groups. The demographics of our panels closely match those of Alaska's population. We do most of the chemical analyses necessary in our laboratories.

You can find our scientists in university classrooms. Sensory panels are excellent tools to teach consumer–marketing principles. We also conduct taste testing at fairs and community events in Fairbanks and the Anchorage area.

Alaskan growers and producers supply the products we test. Recently, we began testing vegetables from the Georgeson Botanical Garden, a part of the Agricultural and Forestry Experiment Station and the University of Alsaka Fairbanbks.

Our scientists prepare market research reports from information supplied by panelists. Students may also prepare market strategies and logos. Sensory panelists might describe a similar product to the one they are testing, provide information on their shopping habits and views on organic products, the *Alaska Grown* program and healthy eating habits

Producers and processors can use the information we provide to promote special attributes of the products we test confident in the knowledge that their claims are supported by scientifically valid research. Consumers can be assured that market claims are accurate when they purchase Alaskan products we have tested.

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AGRICULTURAL AND FORESTRY EXPERIMENT STATION

The federal Hatch Act of 1887 authorized establishment of agricultural experiment stations in the U.S. and its territories to provide science–based research information to farmers. There are agricultural experiment stations in each of the 50 states, Puerto Rico, and Guam. All are part of the land–grant college system. The Morrill Act established the land–grant colleges in 1862. While the experiment stations perform agricultural research, the land–grant colleges provide education in the science and economics of agriculture.

The first experiment station in Alaska was established in Sitka in 1898. Subsequent stations were opened at Kodiak, Kenai, Rampart, Copper Center, Fairbanks, and Matanuska. The latter two remain. None were originally part of the Alaska land–grant college system. The Alaska Agricultural College and School of Mines was established by the Morrill Act in 1922. It became the University of Alaska in 1935. The Fairbanks and Matanuska stations now form the Agricultural and Forestry Experiment Station of the University of Alaska Fairbanks that also includes the Palmer Research Center.

Early experiment station researchers developed adapted cultivars of grains, grasses, potatoes, and berries and introduced many plant cultivars appropriate to Alaska. Animal and poultry management was also important. This work continues as does research in soils and revegetation, forest ecology and management, and rural and economic development. Change has been constant as the Agricultural and Forestry Experiment Station continues to bring state–of–the–art research information to its clientele.

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