

Clusters of Creativity:
Innovation and Growth in Montana

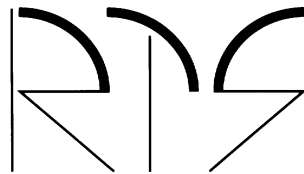
The Food Processing Cluster

A Report to the Montana Governor's Office
of Economic Opportunity



**Clusters of Creativity:
Innovation and Growth in Montana**

**A Report to the Montana Governor's Office of Economic
Opportunity on
The Food Processing Cluster**



**R E G I O N A L
T E C H N O L O G Y
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Prologue: Industry Clusters in Montana

In the Spring of 2002, the Montana Governor's Office of Economic Opportunity embarked on a bold new direction in pursuing the state's economic development. After meeting with leading national experts and consulting with the Montana business community, the state's economic "stewards" embraced the most innovative and promising new approaches to developing good jobs, prosperous businesses, and a competitive Montana economy for the 21st century. The new approaches work from the simple premise that Montana's existing businesses are the state's most important assets. Their entrepreneurial energy and skills represent the state's most efficient source of economic growth. They have chosen to be in Montana for a reason.

This paper represents a single chapter taken from a report conducted by Regional Technology Strategies, Inc., (RTS) that was delivered to the Montana Governor's Office of Economic Opportunity in May 2003. It examines Montana's existing and nascent industries as a set of "clusters." A cluster is defined, in simplest terms, as a geographic region containing enough companies that have similar or related needs and interests to generate external economies of scale and produce innovation. Ultimately, these innovative businesses are likely to export more goods and services outside of the state, creating jobs and wealth for Montanans. To "supercharge" their potential and the state's economic wellbeing, economic development leaders at the state and local levels can focus on working together to organize the state's services in a way that helps them compete and grow, and help the businesses themselves organize to collaborate in ways that enhance their competitive standing. In tandem with this report, RTS also conducted an assessment of innovation and entrepreneurship support capacity within Montana's regions.

The study therefore focused on the questions: Which industries are the drivers of Montana's economy; where, if anyplace, are they clustered; how does this translate to advantage for the industries; and what further advantages can be developed to accelerate growth? The full report analyzes the state's assets and opportunities and recommends a set of cluster-based policies and strategies designed to strengthen its regional economies. It identifies existing and nascent clusters, assesses their strengths, challenges, and potentials, and recommends actions for building and elevating their respective competitive positions. The report also focuses on small, creative, and innovative businesses that are particularly important to Montana's economic success.

We have chosen to analyze six value-added clusters, which represent important regional economic drivers in some depth. The clusters were selected because (a) they already have a significant scale and therefore are important to Montana's overall economy and (b) they comprise very different kinds of industries in different stages of growth.

- The **creative enterprise cluster**, and the **experience enterprise and tourism cluster** encompass products and services and convert Montana's unique culture, heritage, and natural resources into economic advantages.

- **Wood-based industries** and **food processing** are traditional industries important to the state for many decades.
- **Information technology** and **life sciences**—often grouped under the term “New Economy”—are ascendant clusters that have not yet reached their potential.

Some businesses cross the boundaries of these clusters such as agricultural biotechnology (agriculture and life sciences), or custom furniture design firms (wood and creative enterprises, complicating efforts to say just how much of Montana’s economy is involved in these ventures. Nonetheless, a rough estimate is that one-fourth of Montana’s business establishments and just under one-fourth of the state’s employees are involved in these clusters. Cluster members comprise a larger proportion of the state’s highest value-added industry and, we believe, are a significant source of its future growth.

In addition to the industry clusters examined by this report, many other industries employ large numbers of people and produce significant revenue. These include embryonic clusters such as aerospace, environmental technologies, and health care planners, as well as mature clusters such as oil and gas or metalworking. The goal of this report is not to be the “last word” on Montana’s industries of importance, but rather, to help Montana begin to build more effective structures and programs to work with the six clusters and empower the state to be a more effective partner to all of the state’s industries.

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In Lincoln, Hi-Country Snack Foods has grown from two employees making beef jerky in 1976 to more than 50 people making more than two dozen products in eight western states and selected markets across the country. Though facing increasing pressure from both large beef companies and foreign competition, owner Jim Johnson is determined to keep his company locally owned and provide jobs and opportunity for the people he cares about. He takes great pride in his operation. "We offer quality, freshness, and a product that's been hand-picked by people who live here." Johnson is currently developing a strategy to keep the company locally owned after his retirement (it is already 33 percent owned by employees) and is deeply committed to promoting other local food product companies. A large log building in the company's parking lot is Montana Proud Country, a gift shop where other Montana-made products get priority space and are promoted and sold at the request of Mr. Johnson.

Although agricultural employment has dropped below two percent of the labor force nationally, in many parts of Montana it remains the primary economic engine. The massive plains covering roughly the eastern half of the state are fertile and productive, as well as select western areas. While primary agricultural activities (e.g., growing and harvesting standard crops and livestock) provide acceptable income to a diminishing number of families, the high productivity of the smaller number of full-time, and many part-time, farmers and ranchers produces large volumes for processing and marketing.

In addition, specialty crops and livestock have great potential for creating value and wealth among smaller farms and ranches. Two factors have propelled the growth of specialty food products. The first is an offshoot of globalization and the commoditization of many food products. Markets demand high quality in taste, nutrition, and uniqueness in food products. These niche markets now encompass as much as one-third of the \$500 billion U.S. food processing market consumption. The second is an emerging industry related to nutritional needs. Nutraceuticals, which is the combination of nutrition and medicine, has the potential to become a \$65 billion industry worldwide.

If Montana fails to move quickly to add more value to its agricultural commodity products, it will miss an important opportunity. In the first six decades of the 20th century the efficient production of food was a purely American phenomenon. The United States was known as the "world's breadbasket," and the American family farm was the engine that drove it. That has changed in the last thirty years, as globalization of markets and advances in information technology and biological sciences has allowed other nations to catch up in production volumes. According to a recent speech by Assistant Secretary of the United States Department of Agriculture Lou Gallegos, "agricultural production has moved from a commodity-driven system to one driven by consumers who want customized food products and are concerned with the safety, nutrition, and environmental impacts of food production as much as with the taste of their food."

According to a recent article, the Great Plains, which includes most of eastern Montana, has seen a mass exodus in population and risks the unthinkable possibility of becoming completely abandoned save a few large corporate farming operations.¹ Complete reliance on irrigated farming rather than a combination of farming and processing also

poses a serious risk to the water supply. It is now possible, if nothing is done to add value to products, create jobs, and use both human and natural resources effectively through further processing and developing high-value niche products, that the world's breadbasket will eventually become the world's abandoned desert. Indeed, the development of an active, vibrant food processing/ value-added cluster in Montana has even more significance. It could mean the difference between a revitalized industry providing opportunity and reversing the downward trends in rural Montana, or an eventual dire situation for that significant portion of the state.

A Who's in the Food Processing Cluster?

In its broadest definition, the food processing cluster consists of enterprises whose principal activities are the growing, harvesting, processing, and/or distribution of food. Defined more precisely, food processing encompasses companies that add value to agricultural resources and those companies and institutions that support those activities. The food processing cluster can be divided into four tiers.

The first tier of the Food Processing Cluster is the beginning of the supply chain, the individual farmers and ranchers who produce primary food products. They are large in number but small in employment. Many are fourth or fifth generation farmers who take great pride in their ability to feed millions of people and feel a mission to work the land.

The second tier consists of the farmer-entrepreneurs who view their products less as commodities and more as value-added products and attempt to differentiate them from those in the marketplace. Wheat Montana has evolved in the past 10 years from a family wheat farm near Three Forks to a corporation that sells flour products and bread in several western states. Some of the farmer entrepreneurs participate in cooperatives, such as the Amazing Grains Grower Cooperative based in Ronan. Amazing Grains is a Cooperative formed to grow gluten-free grains, a highly profitable niche market, and has had much success nationwide. Now Amazing Grains would like to produce products from their flour, moving further up the value chain. Bob Warren, who heads the effort, sees a large potential market if adequate capital were available to exploit it.

The third tier of the cluster includes larger agricultural enterprises that are able to use economies of scale to compete successfully in the mass-market segment. Many are still privately owned and draw profits back into the community. For them, innovation is key to market differentiation and higher profits. Holly Sugar, based in Sidney, competes successfully in the beet-sugar processing market, and pays farmers in the region between \$40 million and \$60 million annually. Although it is a subsidiary of Imperial Sugar, Holly sees itself as a local company that is committed to the state and has ongoing plans for expansion and diversification.

The fourth tier includes enterprises in which processed foods are fundamental to their product or service and their primary competitive advantage. These enterprises are not engaged in farming, they use farm products as raw materials. They include such enterprises as Busch Agricultural Products, which recently invested in a the construction

of a barley processing plant in Sidney. The plant will handle and distribute barley, primarily to Anheuser-Busch. In addition, a new barley malting plant was announced in January of 2003. International Malting Company will start construction in May on a 16 million bushel malting plant on the north side of Great Falls. It will employ 34 people and require the production of 20 million bushels of malting barley per year.

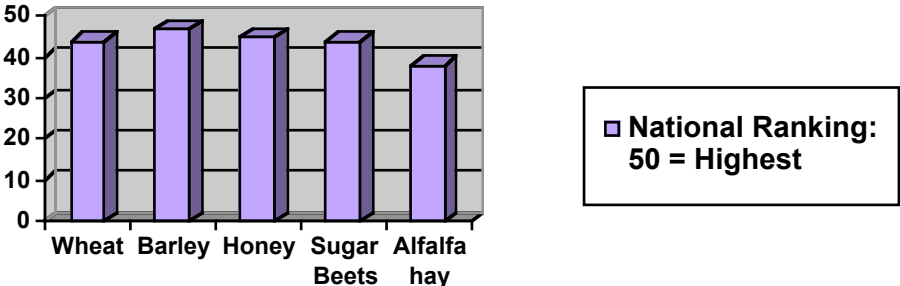
The four core tiers of individuals and enterprises that rely on food processing also rely on various support enterprises, research and development centers, suppliers, educational institutions, and associational structures.

- The support enterprises include accounting and law firms and handle the business side of food processing, engineering and process-design firms that provide process components, marketing and design firms that promote and package products, and distribution firms that provide access to markets.
- The research and development centers are state and federally sponsored research units that attempt to solve critical issues in food production and processing. The USDA Northern Plains Agricultural Research Laboratory and the MSU Eastern Agricultural Research Center, along with the Fort Peck Tribal College, conduct research on pest management, crop rotation, bio-containment quarantine, irrigated high-value crops, production management, irrigated potatoes, and identity preserved wheat. A 160-acre research site in the Nesson Valley provides a collaborative environment for research by all centers in the region.
- The suppliers are the companies that provide equipment, support, and products used in processing and packaging. They include equipment manufacturers and dealers, packaging manufacturers, maintenance suppliers, and related products and services.
- The educational institutions are the high schools, colleges, and universities that offer programs of study, short refresher courses, workshops, and lectures related to food processing and the support industries such as farming, food product marketing, and engineering/ process management.
- The associational structure provides social infrastructure, information, ideas, and scale efficiencies. Many of the specialties within the cluster have their own non-profit organizations and networks, such as the many cooperative grower and producer networks that are promoted by the USDA, crop growing associations, and producer/distributor associations.
- The addition of nutraceuticals opportunities leads to another related group, biomedical research and bioscience companies, engaged in the creation, production and distribution of products that enhance health and healing. Nutraceuticals link the food processing cluster with the life sciences cluster. Collaborative efforts between these clusters should be encouraged.

B Impacts on the State's Economy

According to the Montana Department of Agriculture, the state contains 58.6 million acres of farm and ranch land, and agriculture is the state's largest industry, contributing more than \$2 billion annually to the state's economy. The average size of Montana's 28,000 farms and ranches is 2,036 acres, with total assets of over \$20.7 billion. Production agriculture and related areas account for over 20 percent of employment in Montana. In Montana, 89.6 percent of farms and ranches are owned by individuals or family-owned corporations. The state ranks sixth in the U.S. in wheat exports, and 12th in the nation in cattle inventory. Nationally, Montana ranks high in production of five crops (Fig. V-1).

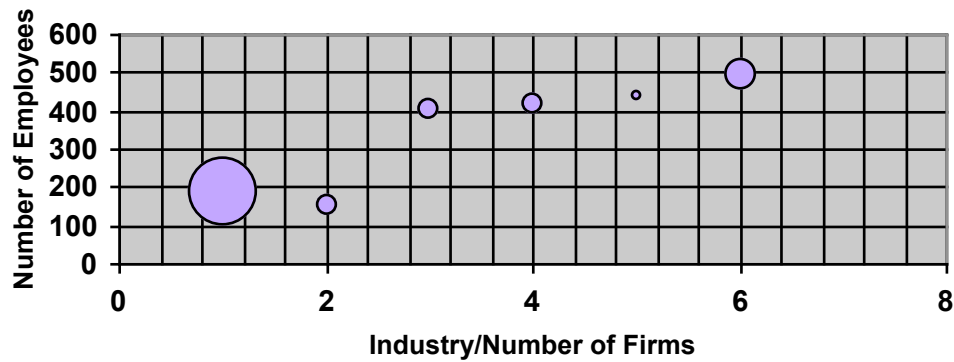
**Fig. V-1
High Ranking Crop Production in Montana**



However, food-related value-added employment is not high in Montana. The total packaged food products employment in Montana was 2,151 in 2000, representing 143 firms. The employment concentration is well below the national average, with a Location Quotient of 0.47. The number of establishments was above the national average, with an LQ of 1.32, indicating that Montana's food processing companies are much smaller on average than firms nationally.

In addition, employment was concentrated in six industries, accounting for 80.2 percent of employment, while comprising only 60.1 percent of firms in the cluster. The following bubble chart shows concentrations of firms and employment. Excluding meat packing plants, the disparity is even more apparent; then, seventy percent of employees are in 30.2 percent of firms.

**Fig. V-2
Dominant Food Processing Industries**



Industry Code:
1 = Meat Packing Plants
2 = Sausages and Other Prepared Meats
3 = Fluid Milk
4 = Bread, Cake, Related Products
5 = Beet Sugar
6 = Bottled and Canned Soft Drinks

We can conclude from these data that there is a wide disparity in firm size, with a few large firms dominating and many very small firms taking up the balance. Therefore, opportunity exists to expand the size of the approximately 100 smaller firms that join the dominant six to comprise this cluster. These firms can be classified according to three types:

- Primary processors (meat, beet sugar, milk, sausages/prepared)
- Value added grains/fibers (malt beverages, cereal, nuts/seeds, macaroni and spaghetti, flour mixes and dough, bread/cake and related products)
- Packaged foods (soft drinks, chocolate/cocoa, canned fruits and vegetables, candy and other confectionaries, food preparations, canned and cured fish/seafoods, ice cream and frozen desserts)

Although the overall numbers are not encouraging, there are individual success stories, such as the previously mentioned Hi-Country Snack Foods in Lincoln, which has grown from two to more than 50 employees. Its growth, combined with its owner's commitment to help the community even at the expense of potentially large earnings, is the heart of successful industry cluster development. The willingness to work together, to share ideas and resources, to bring others along and depend on them, is the very definition of social capital. This spirit, if spread throughout the state, could be a powerful engine of growth for food processing and value-added agriculture.

C Geographic Concentration

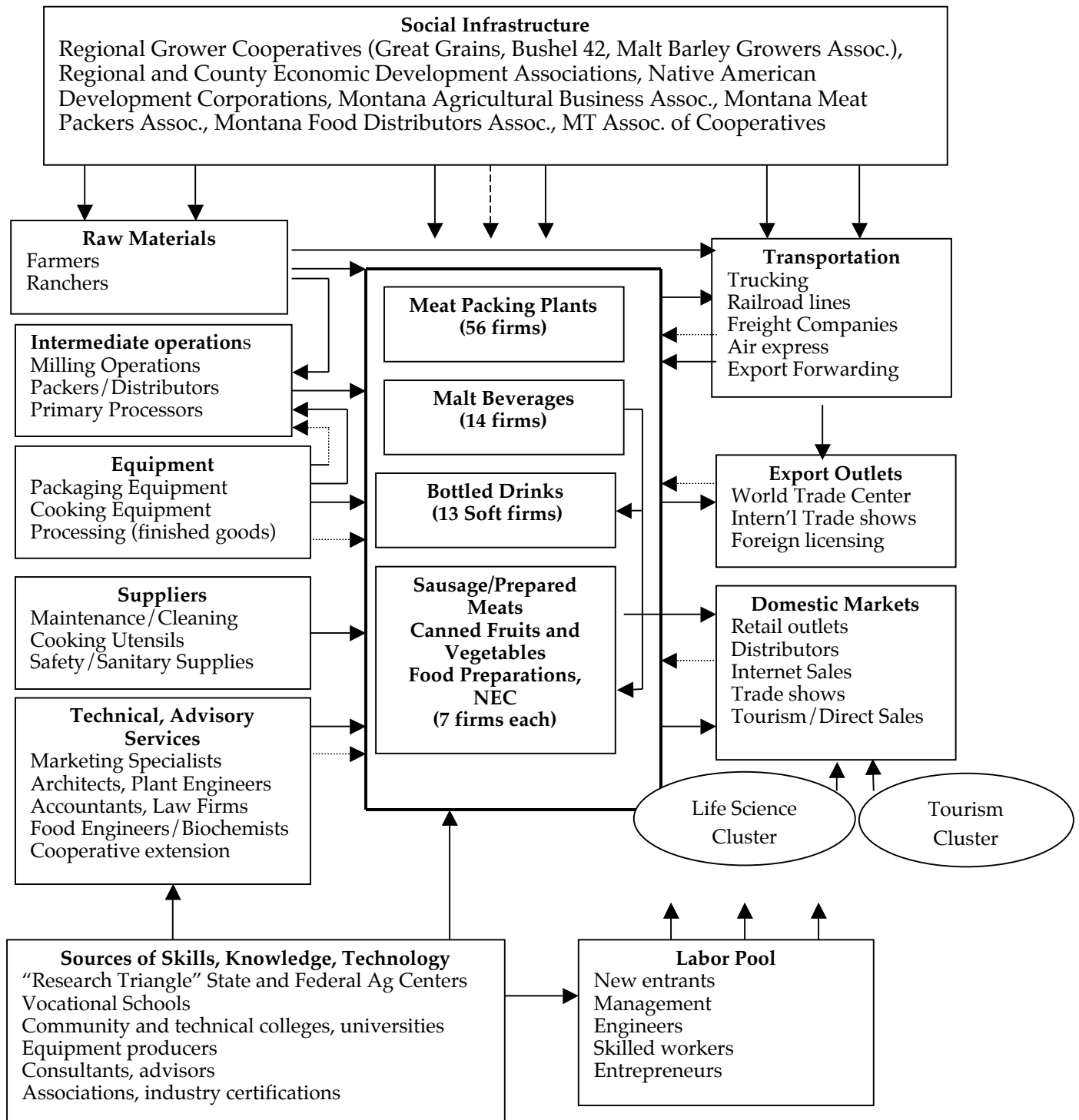
Geographic concentrations of processing firms, shown in Table V-1, generally follow the geography of the state’s agricultural production, with concentrations in the South Central, Southwest, and Eastern regions. These three regions have the highest LQ in both employees and firms, with the eastern region having the highest firm concentration with an LQ of 1.97. There is a presence in every region of the state in beverage bottling, since bottled soft drinks are not a crop or livestock dependent product. That is, they are classified as “food” although the water, sugar, and flavorings they use are all imported into the state.

The Eastern Plains Resource Conservation and Development District (EPRC&D), which encompasses eastern Montana and western North Dakota, has identified several areas of concentration, which are highlighted in Table V-1. Where firms are concentrated, there can be an advantage in collaborating. Notice the variance between employment and number of firms. A relatively large number of very small firms present both challenges and distinct opportunities.

Region	Employees	LQ	Firms	LQ
Packaged Food				
West	454	0.34	36	1.17
Southwest	437	0.43	39	1.54
South Central	583	0.56	27	1.25
North Central	296	0.46	22	1.41
East	332	1.11	15	1.97
STATE	2,102	0.58	139	1.47

Source: Eastern Plains Resource Conservation and Development District

Figure V : Montana Food Processing Cluster



D Profiling the Cluster

Skills and labor

Education and training resources in the state focus primarily on traditional agriculture. The largest concentration of agricultural educational programs is offered through Montana's land grant university, Montana State University, whose College of Agriculture offers the following curriculum:

- Agricultural Economics and Economics
- Animal and Range Sciences
- Entomology
- Land Resources and Environmental Sciences
- Plant Sciences and Plant Pathology
- Veterinary Molecular Biology

In addition, MSU sponsors seven resource centers throughout the state:

- Central Ag Research Center
- Eastern Ag Research Center
- Southern Ag Research Center
- Northern Ag Research Center
- Northwestern Ag Research Center
- Western Ag Research Center
- Western Triangle Ag Research Center

Each of these centers conducts research on animal and plant genetics, growth processes/techniques, and value-added activities such as processing and experimental growing. MSU also offers a program in agricultural education/agricultural operations technology, teaching needed skills for the operation of agricultural enterprises. The University of Montana does not offer degree programs in agriculture, however they do offer biochemistry, microbiology, and botanical sciences options under their chemistry and biology degrees in related fields and a PhD in Biochemistry/Microbiology.

Public community colleges offer courses specifically for the agricultural sector.

Dawson Community College offers four consecutive courses in farm and ranch management geared specifically to farm and ranch enterprises, although mention is made of management of diverse operations. Miles Community College offers courses in farming techniques and various plant and animal raising skills, and Flathead Valley Community College offers four courses on small business management including a course on home-based business.

Many traditional agricultural skills are taught at the secondary school level. The 4H and FFA programs are very active in rural Montana. These programs teach not only needed farming skills, but lay the groundwork for teamwork and collaborative activity. In addition, Agricultural Education, which includes FFA, is a sequential set of courses for students in grades 9-12 that prepares students for further education, self-employment, entry-level jobs, and consumer awareness of the agriculture industry. Agricultural education, offers Ag Business, Animal Science, Aquaculture, Forestry, Horticulture, Leadership, Mechanics, Natural Resources, Plant Science, and Wildlife Management. Most programs consist of three major components: classroom and laboratory instruction, supervised agricultural experiences (SAE) and membership in the FFA. Quality programs are conducted on a year-round basis with students actively engaged in educational activities over the summer months.

Food processors that employ large numbers of people report no shortage of applicants, but they say most applicants are not qualified. Although the requirements for formal education are low, the jobs still require good basic, analytical, and problem solving skills. Employees need technical skills that have to be constantly updated. Though most learning institutions in Montana offer training in agriculture production, food processing courses are unavailable. Despite the lack of school programs and an entry level pay generally at minimum wage, employment in food processing has been growing steadily and is generally stable.

The smaller, entrepreneurial food processing companies have different needs. For them, employees generally need to have a number of skills to perform multiple tasks, from mixing to marketing to maintenance. There is currently no training for these tasks in an entrepreneurial small business context, although Flathead Valley Community College offers four small business management courses, including a class on home-based business management. The most common employment problem reported by small processors was employees' lack of understanding of the opportunities associated with a growing firm, where employees or potential employees tend to note instability and a lack of benefits.

Relationships and social capital

Food processing provides an interesting dichotomy in the arena of social capital. Although agriculture has a long and successful history of cooperation, and Montana is very active in forming grower cooperatives and agriculture associations, the activities of food processing associations are more targeted to general business. The Montana Agricultural Business Association focuses on best practices for the business of farming,

and does address value-added products. The Montana Meat Packers Association and Montana Food Distributors Association address specific needs and could be platforms for more specific market activities. In addition, there are a variety of regional economic development and agricultural organizations, such as the Eastern Plains Resource Conversation and Development District, Action for Eastern Montana, and Flathead Valley Economic Development Corporation that host conferences and workshops. Chamber of commerce and association sponsored events and local or county development agency workshops also facilitate associative behavior.

Suppliers and services

Supply chains are important elements of this cluster, largely because of the specific properties of niche market products such as “pulse” (soup) crops and preserved crops that require specific location identity. Montana’s Department of Agriculture and Department of Commerce have launched branding efforts that attempt to place added value on “Montana Made” products. The abundance of agricultural production provides opportunities for many products, and new niche markets are being developed at a fast rate. The development of safflower oil as a health-promoting ingredient worldwide, the construction of two major barley-malting facilities, and the operation of specialty pasta facilities in the region not only provide opportunity, but also encourage innovative processing and marketing.

Inset V-1. Branding and Scottish Enterprises Food Cluster Strategy A primary aim of Scotland’s food cluster program is to increase international market share and realize price premiums by adding value to primary materials through Scottish branding, improved packaging and presentation, and developing a more advanced supply chain. Within this strategy, they regard health/natural/organic food segments as high growth markets and plan an aggressive effort to build differentiation around Scottish branding, sustainable farming, natural preservation techniques, and a stringent regulatory regime. This goes hand-in-hand with emphasizing value added meal components through better use of food technology, creative recipe expertise, and category management capabilities. Principal targets are premium niche segments of the food service sector and value added meal solutions within the retail sector. The newest initiative, not yet formally announced, is pursuing the interface between food and biotechnology.

The major barley-malting facilities in Great Falls and Sydney provide farmers with an opportunity to diversify from sugar beets or legumes, and their ownership by major corporations provides a level of confidence in their longevity and ability to pay good prices. However, these large facilities also produce dependency on one or two customers and, perhaps most importantly, will require investments in massive irrigation systems that could take away resources from higher value activities. One response to such problems is at Holly Sugar, a large sugar beet processing facility in Sydney, which added more processing capacity and is considering higher value-added products. Perhaps the barley facilities will attempt to provide further processing and higher value as they interact with research facilities and test new markets for their products. Design and engineering expertise is another important part of the supply chain. The larger firms

have designers and architects on staff while small firms contract out the engineering review of the designs, usually to local companies.

Markets and transportation

The less food products are processed, the easier it is to transport them. Processed foods generally require either packaging and/or refrigeration, whereas raw foods can usually be shipped in bulk. One reason often cited for lack of value-added processing in Montana is that it is less expensive to produce such items as frozen dinners and fresh breads to major markets. Montana has a good road system, but transportation adds considerably to the cost of processed foods, particularly those that require refrigeration. The companies interviewed use common carriers—truck or truck plus rail. The problems cited in the wood-based cluster section of this report—lower availability of trucking as trade increases and non-negotiable fees associated with switching rail companies for longer distance shipping—apply to the food processing cluster as well.

Inset V-2: Tropical Food and Cluster Cooperation in Cairns, Australia The region surrounding the city of Cairns, Australia is rich not only in resources, but also in beauty. The Great Barrier Reef sits just off the coast and the marimba rain forest sits between the coast and the tablelands. The tablelands, a semi-tropical strip that separates the rainforest from the outback, is a fertile source of tropical fruits and vegetables, and has been successfully farmed for generations. However, the market for these unique products had always been limited due to transportation and spoilage issues. Distance and shipping times contributed to limited revenue potential and prevented farmers from reaching the Japanese and other Asian markets. In 1997, with the help of the Cairns Regional Economic Development Corporation, the Far North Queensland Tropical Food Group was established. Setting the goals of positioning FNQ Tropical Food as a premium product, selling a mixture of fresh and processed foods, and improving air freight as a primary means of transport, the group began with a brand-building campaign to establish the value of their products in the Asia-Pacific market. Once the brand was established and demand began to increase, FNQ Tropical Foods developed processing facilities to can and bottle fruit and vegetable products and secured air cargo contracts using their combined volumes. The results have surprised even the most optimistic growers. Volume of shipments has increased over 50 percent, and the price points remain at the high end of the market. FNQ Tropical Foods and the other cluster-based efforts in Cairns are documented at www.cairnsregion.com.au.

Technology and innovation

State organizations such as the Montana Manufacturing Extension Service are able to help some of the companies assess their technology needs and organize to use technology most efficiently (i.e., lean manufacturing). In addition, the nature of the industry (a few large firms and many small firms) leads to the use of national associations for large firm needs and small business development centers for small business needs.

The competitive advantage of the companies is more likely to come from innovation in the production of specialty food products. As one owner said: “We are not after a multi-billion dollar market. We want to produce highest quality wholesome food for discriminating customers who are willing to pay a little more for high quality and

healthy food.” Many of the smaller producers use the web extensively for marketing, either individually or through collective sites. The Department of Commerce sponsors a web site www.madeinmontanausa.com that provides both a marketing outlet and a communications tool for producers. In the Made in Montana/Grown in Montana program, vendors must be registered to use the logo and advertising materials.

Inset V-3: The perfect blend New Orleans is known for great food. Thus, when MetroVision, the regional economic development organization, began a cluster-based strategy, a food products cluster was a natural. In pulling together a core group of companies to begin developing strategy, a large number of coffee roasters and distributors emerged. This group soon asked to form their own sub-cluster under the food cluster umbrella, and began meeting separately to develop and implement a strategy for increasing New Orleans as a center for coffee roasting. One of the early competitive needs identified was for a decaffeinating facility, as there were none in the southern U.S. Armed with brochures and facts gathered with the help of MetroVision, sub-cluster members attended the National Coffee Roasters Association show in 2002 with the express purpose of soliciting a decaffeinating facility for the New Orleans region. They were successful in generating significant interest, and talks continue. In the meantime the group has developed a branding slogan, “New Orleans and Coffee—A Perfect Blend, and are working to address other competitive issues. They also continue to work with the food cluster on marketing and skill training issues.

Entrepreneurship and capital

The growth of this cluster, which includes many family-owned small or micro-businesses that are not interested in rapid growth, depends on entrepreneurial interests and abilities. However, in some cases, there is great potential for growth in large, profitable niche markets and owners have a definite desire to expand. There are also cases of innovative ventures that were undercapitalized and subsequently failed.

Entrepreneurship is not an easy process. Mistakes will be made and ventures will fail. But without it, Montana’s ability to generate wealth from its abundant agricultural resources will be severely limited. Every time a farmer plants a seed in the ground, or a rancher delivers a calf, he or she takes a risk. When a group of farmers band together to build a dairy, a beef processing facility, or a sterile safflower processing/research facility, they are taking a risk. The difference in these two risks lies in familiarity and knowledge. Farmers are very familiar with the risks of weather and commodity markets. They are not as comfortable with risks of process management, marketing/distribution, and branding. However, the success of neighboring North Dakota in developing value-added food product processors is directly related to their food cluster effort. By working together, educating each other, and committing to take calculated risks in ventures that are well designed, Montana can achieve the same or greater success.

Inset V-4 Getting Bigger Moo Juice was a 3,000-cow-capacity automated dairy facility that opened in June 2000. It was an immediate media sensation and was heralded nationally as a prime example of diversification within an industry. Unfortunately, Moo Juice was undercapitalized, closed in fall of 2002 after a series of setbacks, and is now for sale. Although Moo Juice was initially unsuccessful (there are currently several interested buyers according to a consultant retained by creditors to market the facility), it did have a positive impact on the region. Because the entrepreneurial spirit is contagious, Moo Juice's potential spurred several other efforts. In Parshall, Western North Dakota, 50 farmers, several local investors, and lenders (including two area banks, the SBA, and the USDA) created NorthWestern Dairy, LLP, and began building a 440-cow dairy that was projected to have a \$2.6 million dollar annual impact on the community. Gene Buxcel, financial manager and consultant for the dairy, says that Moo Juice Dairy set a precedent for other dairies in the region. According to Buxcel, "There were many roadblocks that were difficult to overcome, but the company took risks and set a template. It is that hard work that will make it easier for other dairies in the region to open."

The largest needs expressed were for the "seed" or "growth" capital needed for expansion such as in the case of a home-based business wanting its first independent location or a small producer needing more equipment. Due to the conservative nature of the farming community, there is a lack of willingness to invest in ventures that carry inherent risk. One of the best examples of this was a group of farmers who considered investing in a pork processing facility in the Bear Paw region. Although they had a preliminary commitment from a major packaged meats company, they were hesitant to invest in the venture because it was "new." The risk, though calculated, seems too great for those that risk their life investments every time they plant a new crop. Taking risk is nothing new to the agriculture industry in Montana. The core issue for adding value through food processing is how that risk is measured and managed.

The Montana Fund, a Community Development Corporation based in Missoula and operating statewide, is attempting to meet some of these capital needs. In addition, there are other funds that have expressed interest in investing in Montana, and economic development leaders within the state are supporting investment incentive initiatives designed to draw this investment in. Just as important as availability of funds is knowledge of the industry and how it works from start-up through maturity. The talent to gauge risk and structure investments according to need can be transferred to Montana but is not inherently ingrained, just as it is not inherent in most states.

Equity and opportunity

While lack of formal higher education poses no barrier to capitalizing on the opportunities presented by the food industry, participation, especially in the smaller operations, requires strong skills in analysis and problem solving. Ability to assess and take risk, whether planting crops as a primary producer or creating food products for the specialty or mass market, is crucial to success in the food industry. While training specific to the food processing industry is not available in Montana technical colleges at this writing, training in basic communication, math, and business and marketing skills is available and can easily be applied to jobs in the food industry. State extension offices can assist an emerging entrepreneur with food safety issues.

Residents of the eastern portion of Montana, with its emphasis on agriculture, have an opportunity to take advantage of the growing market for specialty food products. Native Americans in particular have a niche in the specialty food market that can be capitalized on.

The relative isolation of the region is not the barrier it once was, both because of more successful catalogue and Internet marketing to distant customers and because the volume of shipped specialty food products necessary to realize a profit is not as high as it once was.

E Challenges and Possibilities

This cluster, not unlike Montana's wood cluster, faces the basic challenge of coordination and cooperation between the traditional suppliers of raw materials who are facing decline and newer, value-added ventures to increase business opportunities. The Flexible Food Manufacturing Cluster of the New Economy Initiative in neighboring North Dakota can provide valuable lessons for Montana.

Market Access

An often-quoted reason for lack of value added production in Montana is its relative isolation. "We are just too far from the market to ship processed foods. It's much more effective to ship raw food products and have them processed elsewhere."

That argument may have carried weight in the past, but with modern logistics and shipping processes, that differentiation has closed significantly. However, distance does remain a challenge that must be met through innovation and higher value-added. Partnering with similar clusters across the globe can lead to cross-marketing opportunities. The Gold Coast Food Cluster, just below Brisbane on Australia's eastern coast, has as a stated goal the formation of export marketing alliances with similar clusters in other parts of the globe. The intent is to offer specialty foods not readily found and priced at a premium to compensate for the cost of shipping.

Knowledge Capital

Montanans are excellent farmers that have tamed a harsh environment and practice state-of-the-art farming techniques. However, for the most part, that knowledge has not transferred to processing and adding value. Knowledge of opportunities and risks in the processing and adding of value is sorely missing. An entirely new infrastructure of knowledge is needed to provide the skills needed for processing, adding value, and most importantly, developing ideas for new food products.

Leverage

The concept of leverage is the most critical missing element in the development of value-added food processing. Collaboration and the leverage it creates is a familiar concept to most in the Montana agricultural community. But these same farmers, ranchers, and

Montana’s existing food processing community, do not yet have the leverage they need to successfully compete. To be sure, there are commendable efforts such as Made in Montana, the USDA Cooperative Campaign led by William Barr, and the Montana Association of Cooperatives, that attempt to build leverage through collaboration. But more are needed, and existing efforts should be coordinated to first apply the principle of leverage to these critical support institutions.

Table V-2 Cluster Competitiveness Factors		
Factor	Rating	Comments
Skills & labor	3	Skills not transferable from ag. deficient
Relationships & social capital	7	Needs to be transferred from cooperative activity to business opportunity activity
Suppliers & services	3	Lack of critical mass has hindered growth of supplier and service base
Marketing & transportation	2	High cost, difficult for refrigerated/highly processed foods
Technology & innovation	7	Active, well equipped public research facilities and innovative faculty
Entrepreneurship	3	Risk threshold very low for processing
Equity & opportunities	5	More equity becoming available, success of North Dakota spurring competitive spirit to create Montana Opportunities

F Suggested Actions

The actions suggested below represent the ideas of agriculture and food related entrepreneurs, companies, and organizations across the U.S. and in other countries, tailored to Montana’s situation and needs.

Create a Food Entrepreneurship Academy

A primary challenge for agricultural producers is having confidence and knowledge of food processing to begin launching partnerships and joint ventures. The establishment of a food entrepreneurship academy could accomplish a dual goal: (1) to engage the concept of calculated risk as it applies to value-added food and (2) to give producers the tools they need (knowledge of processing, marketing, distribution, and branding) to succeed while teaching the principles of opportunity and innovation networking.

Action: Establish a food entrepreneurship academy that could be offered through a joint venture between the Montana State University Eastern Agriculture Research Center and the USDA Northern Plains Agricultural Research Laboratory.

Inset V-4 NAPA Valley Food Products Strategy The effort in Napa Valley, California revolves around four goals. One is to define quality standards for NAPA food and beverage products and create public awareness of NAPA products—create common branding, with identification based on quality standards primarily and NAPA Valley identification secondarily. A second is to foster better understanding of food and beverage firm needs and opportunities among the traditional financing community and to gain access to non-traditional funding sources. The third is to assist in developing modifications to city and county permitting systems providing additional streamlining, ease of use, and uniform application. The last is to find joint opportunities to market, ship, and distribute cluster products. The key support initiative is the current plan to construct a Food Co-Op building that will provide space to SMEs who manufacture food products. The 25,000 to 50,000 square foot facility will try to attract one or two anchor tenants along with a group of smaller tenants who may share kitchen, refrigeration, and warehouse space. The facility will also house co-packing facilities, fulfillment operations, and possibly shared retail space. The co-op initiative is sponsored and funded by a number of public and non-profit partners.

Facilitate skills alliances for training

Training at all levels of production is needed, and alliances between existing food processors and new collaborative/joint venture entrants would begin to build the needed capacity for processing. Even though degree programs are not required for most agricultural processing jobs, skills are important, and short-term training in the use of new technologies and techniques would make companies more productive.

Action: Make training easier and more efficient through skills alliances that could be administered by the regional community colleges and facilitated by a trained network consultant.

Establish a Native American specialty food incubator

Specialty food enterprises are particularly suited to regions or cultures that have unique foods that can be marketed as “natural” or “homemade.” Since specialty foods are low-volume and high value-added, and are often marketed by Internet and/or mail order, the remoteness of reservations does not constitute a barrier to success. These food specialty enterprises can strengthen local economies by creating jobs as well as providing additional revenue for Native American farmers.

Action: Organized as a cooperative venture in specialty foods by the tribal colleges, the incubator would be housed at one of the tribal colleges in an area strong in Native American agriculture. The Food Entrepreneurship Academy and the skills alliances described above could be linked to this incubator, providing the training necessary to begin a specialty food enterprise.

Strengthen ties to tourism

Tourism can have a significant impact on the development of food processing. Perhaps the best example of tourism as a partner in value-added agriculture, the California wine cluster has opened its vineyards and wineries to tourism with spectacular results. Smaller wineries report that as much as 40 percent of their revenue now comes from tourism. The wineries sell not only their wines, but also a variety of local food products.

The recent development of a new brand of tourism based on authentic rural experiences provides a true opportunity for Montana food processing.

Action: Develop an alliance between tourism, the established agricultural industry and the food processing sector, including coupling sales of Montana food products with tours of farms and ranches, to create new markets and avenues of distribution for Montana foods.

Strengthen ties to biotechnology

The advent of nutraceuticals, foods genetically engineered to heal or prevent illness, has the potential to revolutionize health care worldwide. This industry is projected to provide revenues of \$65 billion worldwide and to create numerous related opportunities for research, development, production, and distribution. The agricultural industry in Montana is already making headway into this exciting marketplace. For example, Safflower Technologies, formed by Dr. Jerry Bergman of Montana State University and his son, Mike, is promoting and developing markets for the oil, seed, and pharmaceutical/nutraceutical uses for the plant. They also work on increasing the production of identity preserved (growing a specific type of seed that is not integrated with other seeds) crops for specialized nutritional and pharmaceutical needs. Initiatives such as these could be magnified greatly with linkages to the biotechnology cluster. In addition, finding and developing nutritional healing qualities in both raw and processed foods will require the efforts of both food producers and biotechnology firms.

Action: A nutraceuticals center of excellence should be established in partnership with one of the major medical centers, MSU or UM agriculture centers, and all social capital organizations to provide an opportunity for transfer of knowledge and innovations and to take a leading position in the development of new products.

Strengthen transfer of research and redirect focus from agricultural centers to processors

The development of nutraceuticals, new processing techniques, higher value added food products, and continuing trends in production and distribution are all highly dependent on research. The existing infrastructure of MSU and USDA research centers provides the foundation for research and development activities in food processing. The MSU center already has conducted research on adding value. Strengthening the amount of research conducted into both processes and markets for Montana food products, with a specific slant toward value added, could greatly accelerate the development of a dynamic, active food processing cluster. A pro-active technology transfer policy that rewards both research institutions for developing technology and producers for utilizing that technology would be one of the best investments Montana could make.

Action: Establishment of a research foundation focused exclusively on food technology would position Montana at the forefront of value-added agriculture. The foundation could work with a variety of public and private research institutions and serve as a catalyst for new activity by providing matching funds and seed monies for research

activities. It could also provide the often-needed firewall between university and industry, while being flexible enough to make direct investments. The foundation could begin as a joint venture between MSU and USDA and be housed at one of their facilities.

Inset V-5 “The Manitoba Advantage,” Canada The food and beverage processing sector is Canada's third largest manufacturing sector and accounts for 14 percent of Canadian manufacturing GDP in 1998. In Manitoba, the food and beverage processing sector is the largest manufacturing sector and has created a set of specialized entities to maintain its position. One is the Food Product Research Center, which conducts food product development, food engineering and process development, custom processing, food evaluation and testing, and nutrition testing and can provide commercial-scale manufacturing needed to assess product development and costs. Other value added food network nodes include the Agriculture and Agri-Food Canada's Research Centres at Brandon, Winnipeg and Morden, the Canadian International Grain Institute, the University of Manitoba's Faculties of Agricultural and Food Sciences, and the Human Ecology Center. The National Center for Agri-Food Research in Medicine in Winnipeg and the University of Manitoba are providing research and development expertise focused on the major crops grown in Western Canada with the objective of helping food processors identify opportunities in food sectors that are expected to enjoy significant growth. This includes expertise to validate health claims. Consumers seeking foods that provide improved health and well being are also demanding scientific evidence for claims made by manufacturers and distributors.

Benchmark Cluster Summaries						
Place	Approx. radius	Specialization	Approx. # of firms	Key assets	Competitive Advantages	Government Roles
North Dakota (statewide)	100 mi.	Value-added Food Products		Innovation Networks, R&D Facility	Entrepreneurial Risk-taking, state support	State of North Dakota sponsors
New Orleans (Southeast Louisiana)	75 mi.	Cajun Foods, Coffee	153	Critical mass, training programs, collaboration with regional E.D. efforts	Cajun “Brand” Reputation, International access (ports), Low wages	State and Regional E.D. act as partners
Cairns, AU (far North Queensland)	150 mi.	Tropical Foods	64	Formal Organization, abundant raw materials	FNQ Tropical Food “Brand”, Access to Asian Markets	Cairns Regional EDC provides ongoing support State support
Gold Coast, AU	50 mi.	Regional and Indigenous Foods	88	Food Center of Excellence at GCU, Formal Organization	Linkages with food clusters in other nations, Asian Markets	Gold Coast City Council, State of Queensland Cluster Initiative
Finger Lakes Region, NY	75 mi.	Dairy, Wine/ Beer, Sauces, Vegetables	436	Jointly-Owned Processing Facility	Access to Market, Established Collaboration	Empire State Development Corp—Trade & Marketing

End Notes

ⁱ Michael Lind, "The New Continental Divide," *Atlantic Monthly Magazine* January-February, 2003.