

IMPACTS ON AGRICULTURE AND HOW GROWERS ARE ADAPTING

CHANGES IN FARM STRUCTURE AND SIZE

Oregon farms number roughly 40,000. About one-fifth of farm operators (19 percent) earn at least 50 percent of their income from farming (2002 Census of Agriculture).

Farms vary significantly in size by acreage, volume of production, and sales. Many barely meet the definition of a farm (\$1,000 in annual sales or potential sales). Others produce millions of dollars of product.

As figure 3.1 depicts, the number of small farms (those with less than \$10,000 in total annual sales) has increased over the past decade from 62 percent to nearly 70 percent of all farms. Ironically, the output of these farms as a percentage of total production and sales has decreased from 2.3 percent to

The “fallacy of composition”

This is an economic concept that helps explain the expansion in farm size and the never-ending struggle between individual actions and collective results.

Individual growers of commodity products have no ability to influence the market because other farmers grow the same thing and buyers dictate prices based on market demand.

Therefore, individual growers have the incentive to plant more acres of product to increase their revenue and spread costs across more units.

When many growers do this, output increases overall, and prices and profits fall. Even though it appears profitable for an individual farm to expand production, the collective actions of all farms expanding leads to a decline in profits for all farms.

It is a continuous treadmill in a purely competitive marketplace for commodity crops and livestock.

Figure 3.1: Change in farm size value, and acreage, 1992-2002

Farm size by value of sales	% of farms			% of ag production \$\$			% of acres under management		
	1992	1997	2002	1992	1997	2002	1992	1997	2002
Small farms: Less than \$10,000 in annual sales	62.1%	61.8%	69%	2.3%	1.9%	1.9%	11%	9%	13%
Medium-sized farms: \$10,000 to \$250,000 annual sales	31.6%	31.2%	25.3%	27.1%	21.5%	18.6%	51%	51%	45%
Full-time commercial farms: Over \$250,000	6.3%	7%	5.6%	70.6%	76.6%	79.6%	38%	40%	42%

Source: US Department of Agriculture, Census of Agriculture.



1.9 percent. This has occurred despite an increase in acreage under management, indicating that this group of growers, though large in numbers, consists of primarily lifestyle, hobby, or retirement operations not oriented toward production efficiencies and economic output. Even so, this group of growers manages more than 2.5 million acres of property, about 40 percent of which hovers around the urban fringe in the Willamette Valley. Many of these growers tend to be engaged with urban marketing efforts through farmers' markets, farm stands, and local restaurants, with total sales of approximately \$60 million as a group—about \$2,250 per farm.

The growing number of small farms in Oregon has resulted in a decreased average size of farm. Average farm size, when including all farms, is 427 acres. The average for commercial operations (those with annual sales over \$10,000) is 1,170 acres.

Medium-sized farms (between \$10,000 and \$250,000 in annual sales) have decreased in number from 32 percent to 25 percent of all farms in Oregon between 1992 and 2002. Output from these farms declined from 27 percent to 19 percent of total, while acres under management declined from 51 percent to 45 percent over the past decade. Clearly, the mid-size farm is being squeezed. Many growers are taking off-farm employment; others are selling out altogether. Still others are adapting their management and marketing strategies to remain in business. Only 37 percent of growers in this group are able to earn at least

50 percent of their income from farming. Off-farm income meets a significant portion of family living expense and a way to provide family health insurance, retirement plans, and other benefits.

Economies of scale (generating enough volume of production to serve larger markets, obtain contracts, and spread costs over more units of production) are a challenge for this group because the wholesale and retail food markets have consolidated and have changed the sourcing requirements of raw food products. This increases the pressure on producers to grow in size (volume of production) or reduce in size. Other strategies growers are using to adapt include bypassing traditional marketing outlets and direct marketing to consumers (farmers' markets, roadside stands, internet sales, specialize contracts); certification programs for niche markets; adding value to products through on-farm processing; and using resources in different ways (diversification into farm recreation or agri-tourism, fee-hunting/fishing, and renewable energy production such as leasing ground for wind towers, etc.).

Oregon has about 2,250 full-time commercial operations with over \$250,000 in annual sales. More than 70 percent of this group earns over half of its income from farming. Indeed, with today's costs, \$250,000 in total sales is a minimal amount of business transaction needed to cover production expenses and have enough left over for family living income.

A major question for Oregon policy makers is: Should food and agricultural policies in Oregon focus on the greatest number of growers (small-scale, lifestyle operations) or commercial growers who earn their living on the farm and who produce virtually all the production?

While this isn't an either/or situation, it does point out that agriculture is diverse and there are no "one-size fits all" strategies for Oregon agriculture. Policies, incentives, regulatory issues, and land management must recognize the broad range of operational types and sizes, and provide an appropriate range of options to match.

The number of farms in this category has held almost constant over the past decade, but as a percentage of all farms it has shrunk because of the increase in small farm numbers. The output, however, has increased substantially, from 71 percent of total agricultural production in 1992 to 80 percent in 2002. Acreage under management has increased from 38 percent to 42 percent of total, indicating that these growers are increasing economies of scale by obtaining land from the mid-size farmers that are being squeezed out of business. These larger operations are able to meet regulatory requirements, specifications, and volumes for present-day global market wholesale standards by increasing volume, adopting new technologies, and focusing on efficiencies. Still, margins are tight and global competition is fierce.

COMPLEXITY OF OPERATIONS

Historically, farms were small and diverse—growing for most of their own food and fiber needs, selling some excess for cash. As industrialization of agriculture progressed, larger volumes of production enabled growers to sell raw products off the farm. These producers had very little involvement in processing or end-marketing of their products.

However, all of the many trends noted in this report are forcing growers to adapt in a variety of ways. Some of the tactics that growers are taking include

1. increasing in size to gain economies of scale, or conversely, decreasing in size and working at off-farm jobs to supplement family income.
2. vertically integrating or taking on “value-added” functions in order to gain a higher portion of the market dollar, enter niche markets, or to remain competitive. In today’s agriculture you can find many farms that are engaged in on-farm processing—from cheese making to processing of fruits into preserves or candies.
3. taking on complex activities designed to address environmental concerns or market needs, such as the construction of an anaerobic digester at a dairy; composting wastes; or undertaking certain practices to obtain “certification” of product.

4. diversifying crops or using their land for new enterprises, such as planting oilseed crops to produce biofuels.
5. finding new farm-direct outlets that increase revenue, such as restaurant sales, farmers' markets, and community-supported agriculture.
6. increasing use of technologies, such as GPS/GIS guidance and precision application systems, laser identification, spot and variable application of chemicals and fertilizers, advanced irrigation technologies, etc.

Any and all of these tactics and activities increase the complexity of the operation. Farmers are faced with navigating unfamiliar regulatory structures and obtaining

new permits, learning new technology and its impacts on their operation and management, adjusting to direct interactions with consumers and end-users of products, and potentially taking on increased debt to finance these new undertakings.

The flip side of these developments is that regulatory agencies are having to re-evaluate their programs that weren't designed for these evolving on-farm activities. In some cases, it even involves determining which agency should be the regulatory body. The important policy lesson is that governments at all levels must recognize the trends and pressures facing agriculture and adapt their approaches of oversight to assist in this transition while conducting their regulatory responsibilities—creating pathways, not roadblocks.

DIRECT MARKETING, VALUE-ADDED ENTERPRISES, NEW BUSINESS ALIGNMENTS

As traditional outlets for small and medium-sized producers have disappeared, growers began to look for more direct marketing opportunities.

Some of these now include

- community supported agriculture (CSA), where growers produce on a “contract” basis for consumers and deliver a package of in-season products throughout the year.
- farmers' markets and roadside stands.
- u-pick operations.
- agri-tourism and “fee-for” activities, such as hunting,



Photo courtesy of Volbeda Farms. Employees making specialty cheeses at the farm operation.

fishing, bird watching, hiking, horse riding, and other recreational activities.

- direct sales to restaurants.
- Internet sales.

The number of farmers' markets in Oregon has grown from just 10 in the early 1990s, to nearly 80 in 2006. Farmers' markets exist across the state, from the Portland metropolitan area, down the Willamette Valley, into Southern Oregon, along the coast, and east of the Cascades. More than 1,000 growers (2.5 percent of all farms) participate each year in selling direct at Oregon farmers' markets. Approximately 90,000 customers visit Oregon farmers' markets each week throughout the season.

The value of growers' receipts in Oregon farmers' markets is estimated between \$30 million and \$50 million (1.25 percent of total ag sales in the state). While this market category is growing and provides critical outlets for smaller operations, it still represents a fraction of overall production. But if not for the development of farmers' markets, many operations that sell through these outlets wouldn't have a market for their goods.

Growers are also recognizing that the present market structure requires forming new relationships and organizations, partnering, and pooling resources. More growers are forming limited liability corporations (LLCs), farmer cooperatives, and other business arrangements to enable joint product sales, sharing of equipment and resources, and addressing marketing costs.



These developments are largely centered in small and medium-sized operations, but larger sized operations are also finding value in partnering and sharing marketing efforts and project development interests.

CERTIFICATION AND MARKET ACCESS

Traditional certification programs in Oregon were focused on seed purity. For over 80 years, Oregon State University has operated grass seed, wheat, and seed potato certification programs that assist growers in meeting standards for marketing their products. In 2006, more than 231,000 acres of seed crops were certified by Oregon State University.

Another recent example of certification includes the Perennial Ryegrass Bargaining Association's development of a "tournament quality" standard certification that created a top tier criteria program for perennial turf seed grass based on seed purity, inert matter, and absence of weeds.

As markets have become more segmented, and with the challenges of competing in the "mainstream" marketing sector, an increasing number of growers of all types of commodities (particularly fruits, vegetables, dairy, and meats) are finding niche markets through certification programs



that enhance market entry and add value to the product. Further, even some of the traditional food wholesale and retail entities are requiring certification for a variety of reasons, including food safety and product traceability.

Many programs have been developed to meet the variety of consumer interests in production processes and location, processor interests in product traceability and phytosanitary production conditions, and environmental interests in land and resource management. A few of the better-known certification programs in Oregon include Oregon Tilth (organic), Salmon Safe (focus on land management/water impacts), Food Alliance (broad sustainability verification), the Oregon Department of Agriculture's Good Agricultural Practices/Good Handling Practices (GAP/GHP) microbial sanitation certification program for fresh fruits and vegetables, and the Low Input Viticulture and Enology (LIVE) program for wine grape production.

A total of 2,613,000 acres were enrolled in these five certification programs in Oregon in 2005-06. This included organic at 49,000 acres; ODA GAP/GHP at 24,000 acres; LIVE at 5,000 acres; Salmon Safe at 40,000 acres; Food Alliance at 2,500,000 acres (of which 20,400 are in fruit and vegetable production, with the remainder in pasture and rangeland for lamb and beef operations).

Certified acreage under these programs amounts to roughly 15 percent of total acres in agriculture production in Oregon. About 95,000 acres of this total is in crop production, or approximately 2.7 percent of all harvested crop acreage (grains, seeds, hay, fruits and vegetables). The certified pasture or rangeland represents slightly more than 25 percent of all grazing lands in the state—a significant trend.

Breaking the crop acreage down, about 20-22 percent of fruit or vegetable acreage is certified, with about 3 percent as organic, another 3 percent to 4 percent as Salmon Safe, 7 percent under

Program name	Acres	Percent of eligible or applicable production
Organic	49,000 total; est. 8,000 in fruit or vegetable crops, 5,000 in grains, 3,000 in other crops and uses, and 33,000 in pasture or grazing acreage.	3 percent of fruits/veg. production; 0.5 percent of grain production; 0.35 percent of grazing/pasture lands.
ODA GAP/GHP	24,000 fresh fruits or vegetables	8 percent of fruit or vegetable crop production acreage.
LIVE	2,410 certified vineyard acres; 6,106 certified farm acres.	21 percent of wine acreage.
Salmon Safe	40,000 varied crop production or conservation acreage, of which about 4,200 is vineyard acreage	0.06 percent of crop land acreage; 30 percent of wine acreage.
Food Alliance	20,400 fruit or vegetable acreage 2.48 million pasture or rangeland	7 percent of fruit or vegetable crop acreage 25 percent of grazing lands

Food Alliance, and 8 percent with the Oregon Department of Agriculture's (GAP/GHP) Program.

Certification programs are growing, but cropland enrolled still represents a fraction of cultivated farmland in Oregon (2.7 percent), although fruit and vegetable production is increasing in acreage with about one-fifth in some sort of certification. Livestock operations are less labor intensive and present a broader appeal, as evidenced by one-fourth of all pasture and grazing lands enrolled.

Growers who export to Europe are increasingly required to meet EuroGap or other certification requirements in order to move product into certain European markets. Given the sensitivity in some European countries to GMOs (genetically-modified organisms) or crops genetically derived to have herbicide tolerance or pest resistance, a certification to designate commodities as "non-GMO" may also be an incentive in certain markets. Some of the certification programs available to Oregon growers require non-GMO compliance, others do not because other markets are tolerant of GMO crops. (See later section on GMO for more details.)

Many certification programs require extra effort and cost for growers to meet specified standards. The incentive for growers to incur the effort and cost is market access and, ideally, higher prices for their products—but this is not always the case. While trends indicate that certification for a variety of programs and

purposes will continue, it is unclear how integrated this will become with the broader production and retailing of food and non-food products, particularly as market premiums disappear with more production. The practices may become standardized and certifications may have less meaning, or at least less financial reward. At present, however, demand is still building.

ADOPTING NEW TECHNOLOGIES

Growers adopt new technology for a variety of reasons. They face continual cost and competitive pressures that force them to look for efficiencies and new ways of growing and harvesting crops. Information and public interest about resource management is evolving, and equipment is evolving to match. Changing product demand and how food is processed can also influence how crops are grown.

Following, are a few examples of technology being employed on Oregon farms.

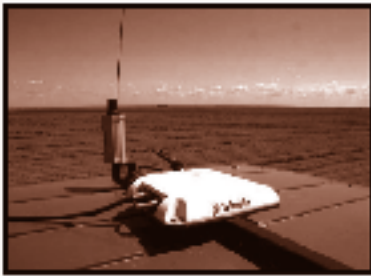
"We remain committed to environmental stewardship including: protection and enhancement of water and soil resources; conservation of nutrients; IPM and reduction and elimination of pesticide usage; wildlife habitat conservation; safe and fair working practices and continuous improvement. But we also MUST substitute capital for labor at a much faster pace. Oregon has one of the highest minimum wage rates in the world... The GPS and satellite guided tractors are an example of our technology focus. We are using these guidance systems for precision farming, again trying to eliminate labor and energy costs. Harvesting equipment is another example. Competition is fierce so we must remain on the cutting edge of technology, product quality and food safety...."

-Karla Chambers, Stahlbush Island Farms



- GPS/GIS technology used for crop and field imagery and mapping, guidance systems in tractors and harvesting equipment, and variable rate application of fertilizers.
- Spot application of chemicals through infrared identification of weeds.
- High efficiency irrigation (water distribution) and pumping technologies (energy conservation).
- Renewable energy technologies and opportunities for different farming methods or new uses of resources.
- New forms of harvesting equipment designed to minimize labor requirements.
- Biotechnology.
- Radio frequency identification.

GPS TECHNOLOGY



Radio Frequency Identification, or RFID technology, is made up of tags—essentially wireless bar codes that store a variety of information about the product—and radio frequency scanners that read the tags. Through RFID, commodities can be tracked from supplier to distribution to point of sale for the purpose of identification and quality control.

RFID has been around for about five years, but is now becoming more popular because the technology has been standardized to allow growers, distribution chains and retailers to use the same data formats. Larger retailers, like Wal-Mart, are now requiring RFID as an entrance point into their market for some products. Consequently, if growers want to work with these retailers, they need to adopt and know how to use the technology.

With RFID, the place of origin, variety, and harvest date of fruits and vegetables can be tracked. RFID technology can also monitor temperatures inside a shipping crate to determine if the product was subjected to extreme hot or

How Are We Globally Competitive ?

More TECHNOLOGY

- Irrigation Systems –
 - Center Pivot Irrigation Systems
 - ▷ 50% Water Than Traditional Flood
 - ▷ 25% Less Water Than Older Style Pivots
 - Drip Irrigation Systems
 - ▷ 33% Less Water Use Than Pivots
 - Variable Frequency Drives on Pumps
 - ▷ 25% Less Electrical use



Photos courtesy of American Onion/Hale & Levy Farms

cold conditions that may affect its quality.

CHALLENGES IN MARKETING

Oregon isn't a high-volume leader in any but a handful of crops, such as hazelnuts, grass seed and Christmas trees. However, it is world-renowned as a producer of unique, varied, and high-quality riches, such as the Bing cherry, the pears of Hood River, the Brooks prune, or the mythic Marshall strawberry.

There was a time during Oregon's agricultural history that simply offering these gems to the consumer was enough of a marketing plan. Oregon set the bar for quality, and the world came to us. In the post war era and well into the 1970s it was a prosperous time for row crop and fruit producers. Rich soils, skilled growers, and superior quality supported hundreds of processing plants, all providing products that sold themselves without the need to differentiate, brand, or promote.

However, as the Greek philosopher Heraclitus stated so well, "Nothing endures but change."

Soon, other production areas noticed Oregon's success and began aggressive programs to compete in both exports and brand notoriety. The California strawberry is a good example—research began to produce better taste and yields. Were these competing products as good as our Hoods, Marshalls, or Totems? No, but their plentiful yield gained a price advantage, and the growing season was much

longer than in Oregon. It would be surprising to most consumers to learn that in the 1950s, Oregon actually led California in the production of strawberries.

Additionally, the boon in exports during the 1970s and 1980s led to greater national expansion of farming programs and inflation of land values. The higher value of the US dollar, led by the rising economy in the state and the nation during the 1990s, further depressed export values. This can be demonstrated by showing the value of Oregon wheat exports, which dropped from \$270 million in 1997 to \$97 million in 1999. As the dollar eventually softened against world markets due to the dot-com technology bust, export values began to pick up again in 2002.

These swings in dollar value, market demand, and resulting export fluctuations directly impact Oregon's agriculture producers. One might question, why try to compete internationally? Why not focus on providing for our own built-in consumers, the Oregonian?

The answer lies in limits on consumption: at a population of just 3,641,056 (2005 US Census) Oregon comes in at 28th in US state populations. Our population per square mile is 35.5, compared with the US average of over 90 people per square mile. All of those wide-open spaces and natural resources are a bit of two-edged sword—we produce a bountiful harvest that can't possibly be consumed within our state. So the pattern has been to look outside our state's borders once local



demand has been satisfied. (See chart on Oregon’s self sufficiency.)

So how does Oregon agriculture compete?

There are basically two approaches to marketing food products in the developed markets outside of Oregon, such as the US, Europe, and Japan.

The first approach is volume-oriented and time-dictated, dependent upon low-cost, year-round availability and low

transportation costs. In this track, source of origin isn’t nearly as important as availability and cost. For example, mandarin oranges sourced from Morocco, Korea, or California may be displayed side-by-side at a Costco during the holiday season, and most consumers either don’t notice or don’t care where the mandarin oranges came from.

Growing seasons in certain locations can be extended by expanded plantings in higher or lower elevations. Controlled atmosphere storage and sophisticated packaging can allow for longer shelf life. Lower labor costs in developing countries in Latin America and China also compete against producers in developed production regions, like Oregon, that pay higher wages and withstand greater regulatory “overhead.”

Competing in this arena is not—for the most part—Oregon’s best strategy, although much of agriculture is still in this position, including significant portions of production of potatoes, onions, pears, wheat, grass seed and others. However, Oregon’s high cost basis makes it difficult to compete with other regions that enjoy abundant low-cost hand labor, longer growing seasons, and low-cost value-added packing and processing. Transportation factors, however, are beginning to mitigate some of the expense of long-mileage shipment from other areas—but it also affects Oregon’s out-bound exports.

The second approach to marketing agricultural products is premium

Chart 3.3—Production and consumption, Oregon, in pounds, 2004

Commodity	Production in Oregon	Consumption in Oregon	Percent satisfied with local production
Pork	24,180,000	182,354,340	13.3%
Lamb	975,000	4,034,008	24.2%
Beef	73,970,000	235,735,080	31.4%
Grapes, wine ¹	38,800,000	108,409,476	35.8%
Lettuce	30,576,000	79,265,025	38.6%
Salmon	5,922,086	7,949,789	74.5%
Pink shrimp	12,206,890	15,046,920	81.1%
Apples	160,000,000	181,996,080	87.9%
Albacore tuna	10,594,609	11,822,580	89.6%
Strawberries	36,288,000	25,078,200	144.7%
Caneberries	2,930,000	1,074,780	272.6%
Milk ²	2,384,416,000	789,671,970	302.0%
Potatoes	2,214,800,000	481,877,690	596.2%
Wheat	3,358,800,000	481,143,180	698.1%
Blueberries	13,400,000	1,791,300	748.1%
Green peas	82,800,000	10,389,540	797.0%
Sweet corn	519,820,000	61,978,980	838.7%
Dungeness crab	23,756,000	2,181,803	1,088.8%
Snap beans	230,640,000	20,062,560	1149.6%
Onions	1,190,112,000	77,615,869	1533.3%
Pears	420,000,000	20,062,560	2093.5%
Sweet cherries	84,000,000	3,582,600	2344.7%
Hazelnuts	75,000,000	233,933	32060.4%

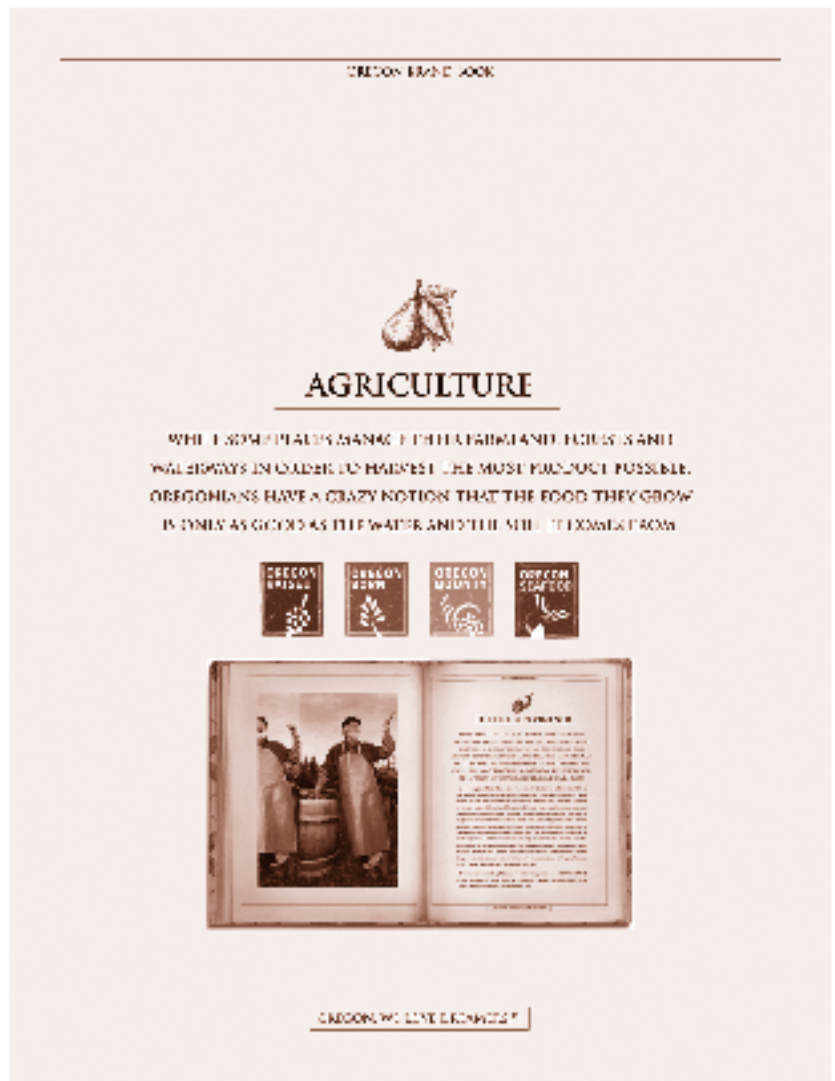
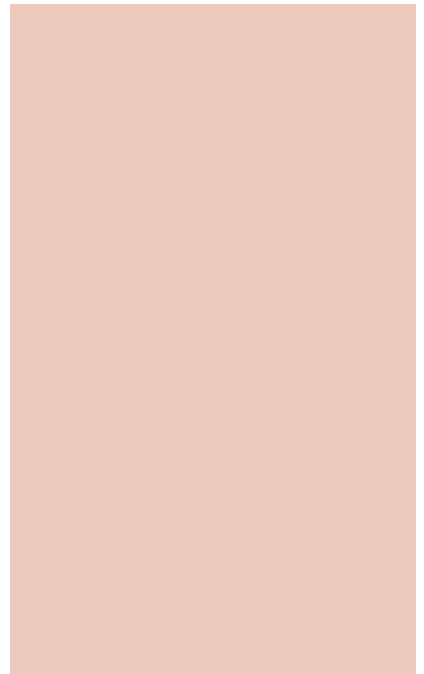
1. based on conversion of 150 gallons = 1 ton = 2,000 pounds.
 2. includes milk and cream, cottage cheese, and American cheese.

quality, rather than commodity-driven products. While most Oregon products measure up to quality standards and exceed those of other areas, being competitive requires building more value into the process. It involves more sophisticated marketing techniques, diversity in product offerings, attention to record-keeping and documentation, certification programs, and up-to-date technology in production, processing, and packaging. This second track is much less sensitive to price and availability, and more dependent on specific product attributes such as where it is produced (location brand identity), how it is produced, and how it is used and consumed in a given market. In other words, this marketing plan involves a story, and telling the Oregon agricultural story is a natural. The Oregon Bounty and Brand Oregon marketing efforts are great examples of this.

Popular culture, current health concerns, and gourmet trends have all converged with Oregon's prime positioning to take advantage of this marketing track. The "romantic" nature of our state's image resonates both nationally and internationally. The state still has an enduring cache as a beautiful and unspoiled corner of the "Great West." Our products are synonymous with quality and rarity. In places as remote from our state as Penang, Malaysia, Christmas trees are advertised with large banners stating, "We Sell Oregon Christmas Trees."

"Natural" and the related association with organic labeling

is currently one marketing tool driving a segment of consumers. "Local" identification, whether it is truly local, regional or national, is another desired factor in restaurant menus and grocery shelving. Think—how many times has a consumer recently gone to a fine restaurant where the origin of a menu item, not just the cooking description, is narrated either verbally or in print? The Oregon identification can be an advantage. In a recent international poll, Oregon ranks number 11 of all US states in recognition and key positive attributes to overseas consumers and travelers.





Oregon's product diversity and appealing image provides a vivid and appealing palette for consumer marketing. Following, is the list of the state's top ten fruit, vegetable, and nut crops, by dollar value in 2005, as provided by the National Agricultural Statistics Service.

1. Potatoes
2. Onions
3. Pears
4. Hazelnuts
5. Wine grapes
6. Cherries
7. Blackberries
8. Blueberries
9. Sweet corn
10. Snap peas.

Many of these exact products have been widely touted for their health benefits in countless magazine and newspaper articles. And as for their culinary appeal, a French Impressionist artist couldn't paint a more visually appealing image of offerings.

These are some of the opportunities present in the quality-driven, product-differentiated marketing approach. A growing number of Oregon farmers, ranchers, vintners, processors, retailers, and food services have moved away from the commodity-driven track and are finding success in employing a diversified marketing strategy. The unifying and common theme for all is the ability to tell the story of the product—where it comes from, how it is produced, and what makes it valuable and desirable. Resources— public and private— as well as a long-term commitment to this strategy are required.