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Economic Strategies for Washington Agriculture





AG-2000: Economic Strategies for Washington Agriculture

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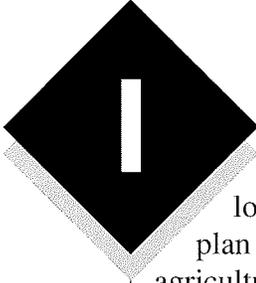
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Under the direction of:
Agricultural Market
Development Advisory
Committee



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Introduction

AG-2000 is a long-term strategic plan for Washington agriculture. The purpose of this planning effort is to help position the state's agricultural industry to best take advantage of future economic development opportunities to the year 2000 and beyond.

The strategic plan presented in this document is the result of a two-year effort by the Washington State Department of Agriculture and the Agricultural Market Development Advisory Committee. Input into AG-2000 has been provided by individual farmers and ranchers, processors, merchandisers, commodity commissions, grower and industry organizations, agribusiness firms, university interests, and government agencies. The result is a set of economic strategies for all of Washington agriculture, focusing on five strategies that address priority issues influencing the future of the state's agricultural industry.

The concept and development of AG-2000 is explained and the strategic plan is presented in the **Overview**.

The **Diagnosis** examines the current status of Washington agriculture and presents the concerns of Washington agricultural industries.

The five **Strategy Discussion Papers** provide a more detailed examination of the logic, goals, opportunities, challenges, and activities that define each of the strategy areas. It is important to recognize that these strategies represent a long-term vision for Washington agriculture, rather than near-term solutions to immediate concerns. The strategies offer fundamental solutions to broad-based issues that are expected to significantly influence Washington's future. The five strategy areas are: 1) Domestic and International Marketing; 2) Commercializing Science and Technology; 3) Value-Added Processing; 4) Building Infrastructure; and 5) Natural Resource Management.

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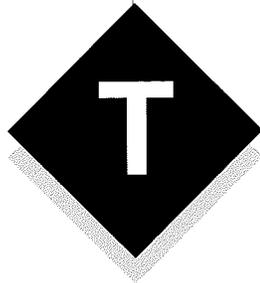


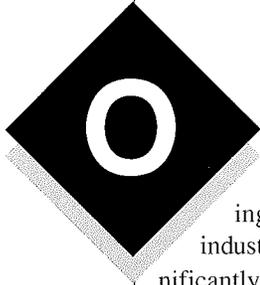
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Overview

To say that Washington's agricultural industry has changed significantly during the past twenty years is an accepted fact. To suggest that agriculture will continue to change and evolve in the next twenty years—perhaps at an accelerated rate—is only mildly controversial. But to recognize and design the attitudes, decisions, and actions today that will chart the course for the next generation of agriculture has proved a formidable challenge in this industry.

Washington agriculture is the farming, ranching, processing, business, and associated cultural activity that combine to produce food, fiber and certain industrial goods for consumers in the state and around the world. The common thread of agriculture is a reliance upon the natural resource base inherent in the soil and water that is used under relatively intensive practices to produce raw agricultural products. The raw products are transformed through a complex network of transportation, handling, processing, and marketing channels into final goods for consumers.

Farmers and ranchers often are viewed as the essence of agriculture, but growers are not the only decision makers with an interest in this industry. Processors, input suppliers, distributors, merchandisers, consumers, and the government all have a stake in agriculture.

The opportunities and challenges facing Washington agriculture are large, complex issues that may appear beyond the reach of the individual. But to do nothing in this competitive environment is to invite stagnation and mediocrity. Long-term coordinated strategies are necessary to deal effectively with selected issues—regardless of their magnitude—in a concerted effort to position Washington agriculture for the future.

The planning effort undertaken in this study is designed specifically to address opportunities and challenges in Washington, relying upon both private and public interests representing the agricultural industry. The collective plan is entitled *AG-2000: Economic Strategies for Washington Agriculture*.

Purpose

The purpose of AG-2000 is to position the industry such that the state's diverse agricultural interests can best take advantage of future economic development opportunities to the year 2000 and beyond. This implies an offensive stance towards the economic opportunities and challenges facing the state's agricultural industry. The strategic planning process also identifies high priority, focal issues crucial to the basic strategy and places these topics on the agenda of relevant decision makers. The strategic planning approach is intended to be proactive in terms of initiating actions in the present that address future opportunities and challenges.

The focus of AG-2000 is Washington's private and public agricultural industry. This includes local and county issues, but primary attention is placed on those topics that are relevant across a range of agricultural interests in Washington. Economic growth and development in Washington agriculture are important contributors to the health of the overall state economy, as well. Agriculture is one of Washington's most important basic industries, generating jobs and income far beyond the farm gate as the direct and indirect results of the manufacture, distribution, and sales of farm products.

The role of the Washington State Department of Agriculture in initiating the strategic planning process is to: 1) facilitate in a public setting the organization and development of appropriate strategy areas; and 2) provide a public catalyst for industry action and follow-up in the designated strategy areas. It is emphasized, however, that AG-2000 is in both development and execution, an industry plan. The implementation of specific strategies will require the long-term commitment of energy and resources from a partnership of private and public interest. The critical momentum for economic growth and development relies on the actions of private firms and entrepreneurs operating in the competitive agricultural sectors.

The Strategic Planning Effort

AG-2000 is the result of a concerted strategic planning effort initiated by the Washington State Department of Agriculture in 1985 on the recommendation of the Agricultural Market Development Advisory Committee. This committee serves as a non-paid advisory board to the Washington State Department of Agriculture, the Department of Trade and Economic Development, and the IMPACT Center at Washington State University in matters pertaining to the marketing and development of agricultural products. Membership on the 17-member advisory committee (see Appendix) represents a cross section of the Washington agricultural industry covering production, processing, commodity associations, transportation, finance, merchandising, and distribution. In 1986, the advisory committee accepted the added responsibility to provide input from the agricultural industry into Gov. Booth Gardner's Economic Development Board. The Economic Development Board is empowered to develop a long-term strategic plan for the entire Washington State economy.

In view of these two responsibilities, the advisory committee commissioned a preliminary assessment of planning needs for Washington agriculture in the fall of 1986. Based on recommendations contained in the preliminary report, a formal strategic planning process was initiated under

the direction of a consultant in July 1987.

The strategic plan represents input from a cross section of agricultural interests in the state. Individual growers, processors, marketers, agricultural commodity commissions, grower and industry organizations, off-farm agricultural businesses, and university and government agencies were apprised of and involved in the planning process, in an effort to gather a broad, representative perspective of Washington agriculture interests. Suggestions and concerns voiced during the six-month input-gathering stage were incorporated with those developed by the advisory committee in specifying: 1) preferred futures/objectives; 2) emerging issues in Washington agriculture; 3) major challenges and opportunities; and ultimately, 4) priority strategies.

Based on this decentralized form of strategy development, it must be recognized that all agricultural interests cannot be simultaneously served. In some cases the funding requirements, ongoing controversy, or conflicting viewpoints within agriculture preclude narrow strategy prescriptions, and require a more basic approach at a level of common agreement.

The AG-2000 Findings

AG-2000 has been developed following a conceptual model adopted by the Washington State Economic Development Board, as outlined by the private, non-profit Committee

for Economic Development. There are three components in this approach; 1) diagnosis of the industry and its economic potential in light of existing and future conditions; 2) developing the vision of the desired future outcomes that defines the longer term dynamic economic objectives of agricultural interests; and 3) producing the actions necessary to achieve this vision. Each of these components will be briefly discussed in terms of the conclusions drawn.

Diagnosis. The diagnosis of Washington agriculture reveals a diverse, complex agricultural industry, just emerging from a prolonged economic malaise that began in 1982. Broad financial indicators of Washington's agricultural economy such as firm solvency and liquidity, farmland values, export volume, and commodity prices show signs of improving. But recovery is not complete, nor uniform across the industry.

In many respects it appears that the agricultural industry in Washington and the United States is now entering a new era of international and domestic economic relationships. Whether this will work to the benefit or detriment of the state's agriculture depends largely on the plans and actions undertaken to deal with the changing economic environment.

Washington agriculture appears favorably situated to exploit opportunities in new products and markets, advances in biological and information

technology, and value-added processing. At the same time, the state faces recurring challenges in achieving efficient use of natural resources, maintaining competitiveness in world markets, building and maintaining infrastructure, regaining profitability, reducing government regulation, and managing lingering excess productive capacity. The ongoing evolution in the structure of agriculture, along with the internationalization of this industry into the world economy suggest a future of continued structural and economic change on into the 21st century.

Long-range diagnosis and planning by the College of Agriculture and Home Economics at Washington State University—and echoed in similar long-term planning efforts from other groups—focuses on a set of emerging issues in Washington agriculture. The suggested priority areas can be summarized as follows: 1) competitive actions and strategies to support marketing and new market development; 2) advances in production and processing technology, to include the transfer or commercialization of this technology to the private sector; 3) the development of new and alternative crops and products; 4) soil and water use and conservation; and 5) family and community well being. These issues are prevalent across a broad spectrum of the agricultural industry, but with varying

Table 1.1. Preferred Future for Washington Agriculture

- 1. Become a market-driven economic community with reduced dependence on government policy.**
- 2. Develop a broad base of marketable commodities and appropriate markets.**
- 3. Increase the opportunity for profitability in the agricultural industry.**
- 4. Enhance the economic growth and improve the business environment of Washington's agricultural sector.**
- 5. Achieve an efficient use of Washington's resource base: land, labor, water, capital, and management.**
- 6. Obtain ready and efficient access to markets for agricultural inputs and products.**
- 7. Achieve a more stable level of prices, production, sales, and net returns to individual firms.**

can be achieved through economic outcomes determined in the marketplace.

Visualizing these objectives in terms of their impact on agriculture requires careful consideration of the evolving economic and cultural environment that must support the vision. Contemporary analyses of the U.S. and world business climate indicate that the traditional ideas about U.S. business organization and management are giving way to new concepts. In some cases, these changes are being forced by the competitive pressures of the world economy. In other situations they reflect the ongoing evolution in process and product technology.

operations in areas such as the high-valued, market-oriented specialty crop sectors. Agribusiness and food processing firms will modify production, marketing, and organizational practices based on parallel changes in the business sector.

Action. The strategies developed in AG-2000 are the action initiatives designed to take Washington agriculture from the current situation towards the objectives envisioned in the preferred future. As such, the prescribed strategies address the fundamental direction, priority issues, and necessary policy commitments in support of longer term goals.

implications for individual commodity sectors.

Vision. Plans and actions implemented in the present will influence the future. Future developments cannot always be controlled, but their consequences can be anticipated and managed. Central to the AG-2000 effort is a vision or recognition of the preferred future which should guide planning efforts. Basic, long-term objectives representative of a cross section of Washington agricultural industry interests are summarized in Table 1.1. These objectives initially were identified by the Agricultural Market Development Advisory Committee, with refinements added in subsequent reviews by various agricultural groups and individuals in the state.

A dominant theme represented in these objectives is the preference for an efficient, market-oriented agricultural economy. This implies a declining reliance on government agricultural price and income support programs, especially those that directly regulate economic activity. Objective one recognizes that the government plays an important, useful role in certain regulatory and educational functions that improve the overall performance of agricultural markets. There is support for continuation of those activities necessary for maintaining a safe and nutritious food supply and a progressive and orderly agricultural industry. However, there is also a strong belief that acceptable solutions to many problems in agriculture

Successful entrepreneurs in the competitive marketplace envisioned in the AG-2000 preferred future are likely to be characterized by traits such as flexibility, product differentiation, rapid innovation of new technology, good marketing abilities, creativity, and strong coordination and cooperation skills. In contrast, a successful model of farming and agribusiness firms during the past twenty years has been one of capital-intensive, large-scale, supply-oriented, low-cost production of bulk, homogeneous products. This does not mean the end of traditional agricultural enterprises. The low-cost, efficient production of bulk commodities will remain an important part of Washington agriculture. But the potential for economic growth appears better for flexible

Table 1.2 lists the AG-2000 Economic Strategies for Washington Agriculture, summarized in terms of the component objective areas as shown. These five issues have been selected as priority areas of significant long-run strategic importance to the state's agricultural economy. In each case, concerted effort could be applied to shape future developments to the benefit of Washington's agricultural and general economy. These strategies do not attempt to address all of the important issues confronting Washington agriculture. Future changes and shifting priorities may well create other issues of priority economic significance.

Domestic and International Marketing. The domestic and international marketing

strategy focuses on improving marketing performance in agriculture, with emphasis on both domestic and international sales. Increasing marketing opportunities and alternatives for agricultural firms is seen as a coordinated effort in market intelligence, analysis, promotion and support. In addition, a high priority is placed on developing new and alternative crops and products, directed towards designated market opportunities.

Of the five strategy areas, domestic and international

marketing is the only strategy formally in place. Positive commitments by the state of Washington with widespread support from agricultural industry groups has established the Market Development Program within the Washington State Department of Agriculture, and the International Marketing Program for Agricultural Commodities and Trade (IMPACT) Center at Washington State University. Given these existing resource commitments to marketing, the strategy serves as a planning reference and means of coordinating actions. This

strategy also provides an example of the type of positive initiative Washington agriculture is capable of undertaking in structuring this industry's future.

Commercializing Science and Technology. In order to ensure innovative, technologically advanced production and marketing abilities in Washington agriculture, particular emphasis is needed to provide for the efficient commercialization or transfer of new technological discoveries. Advances in biological and information technology will likely play a crucial role in the future of agriculture. A three-pronged approach is suggested in this strategy, incorporating: 1) the forward-looking assessment of new technology and potential applications in agriculture; 2) the scientific research necessary to develop useful applications of this technology; and 3) a commercialization process that builds university-industry alliances to enhance the transfer of new science and technology.

Value-Added Processing. The farmgate share of the consumer's expenditures for food and agricultural products averages only about 30 percent nationwide for a representative basket of goods. The 70 percent added to the farmgate value is primarily activities such as handling, manufacturing, packaging, merchandising, etc. These processing activities not only add value to agricultural products, but also create additional jobs and income for the state's economy.

This strategy is designed to enhance Washington's ability to increase value-added processing activity for agricultural products. The state has a diverse supply of raw products and inputs available for processing enterprises. But in view of the domestic and international competition in this industry, efforts should be carefully targeted to those processing activities with the most promising potential. This strategy seeks to identify and coordinate key variables in the food processing industry such as finance, taxation, research, regulation, and environmental compliance. Efforts are also intended to guide and encourage the development of new processes and technologies in value-added processing to exploit emerging marketing opportunities.

Building Infrastructure. A comprehensive plan for Washington agriculture must include a careful examination of the associated private and public services—the infrastructure—that support this industry. Too often, these supporting services are taken for granted until a crisis arises. As part of the long-term strategy, AG-2000 explicitly recognizes crucial linkages between commercial agriculture and the infrastructure. Long-term planning is necessary in some areas of the infrastructure that may not be efficiently linked to the normal economic signals offered in agricultural

Table 1.2. AG-2000: Economic Strategies for Washington Agriculture

- 1. Domestic and International Marketing**
 - a. expand market information program
 - b. target market analyses
 - c. refine product development process
 - d. provide product promotion support
 - e. enhance marketing support programs and services
- 2. Commercializing Science and Technology**
 - a. assess potential of new discoveries for agriculture
 - b. support technology development
 - c. enhance commercialization process
- 3. Value-Added Processing**
 - a. improve business climate for agricultural processing
 - b. encourage or recruit selected processing activities
- 4. Building Infrastructure**
 - a. assure high quality education base
 - b. assure adequate financing resources
 - c. provide basic transportation network
- 5. Natural Resource Management**
 - a. establish multi-interest coalitions on natural resource use policies
 - b. develop increased efficiency in natural resource use
 - c. increase public and industry education about agriculture and the environment

markets. Agricultural education, financial services, and transportation are highlighted in this regard.

Natural Resource Management.

Both in the immediate future and the long-term outlook, no area of agriculture appears clouded with such controversy, uncertainty, and change as does natural resource use and conservation. Natural resources such as land, air and water are viewed as multiple-use goods in our economy. No single entity has absolute ownership. Multiple-use, given greater social and economic demands for these resources, has led to numerous conflicts. Increasingly, natural resource use conflicts are finding their way into the judicial system and government regulation.

Because agriculture is highly dependent upon natural resources and the environment, the industry has much at stake in the allocation decisions that are made, ranging from pesticide use to water quality to land use planning. Simple prescriptions or market solutions are unlikely to solve the natural resource problems and issues facing agriculture. It is important, however, for this industry to provide a format and leadership in the allocation decisions that are ultimately made. The AG-2000 strategy proposes multi-interest coalitions of all concerned natural resource users, including agriculture. Coalitions would operate on a mediation basis to resolve natural resource use conflicts.

Modeled after the Timber-Fisheries-Wildlife coalition formed to deal with forestry-related natural resource uses, this process appears to be a necessary first step to establishing equitable long-term agreements on natural resource use in agriculture.

Implementation

The AG-2000 strategies are long-term areas of involvement. The desired outcomes as outlined by the objectives may not be fully realized until ten to 20 years in the future, reaching into the 21st century. Attaching narrow, inflexible prescriptions to these strategies may well render them outdated and inappropriate as economic conditions change. Thus, the AG-2000 strategies are intended to be general, acting as guiding, ongoing philosophies rather than detailed action plans.

The process for achieving the objectives embodied in the long-term strategies needs to be explained in an implementation scheme. This defines the individual steps that are the actual activities used to carry out the strategy. To provide more specific definition of the AG-2000 strategies, an additional two to five objective areas and associated activities have been developed within each strategy. The actual activities, leadership and resources required to reach the objective areas will provide the implementation procedure for making the strategies operational. The near-term activities for pursuing the AG-2000 strategies will likely start with

very basic but crucial steps such as gathering additional information, assessing resource requirements, and identifying leadership.

State government has played an important role in initiating the AG-2000 planning process by gathering, analyzing, and summarizing information, directing public resources, and providing the catalyst for initial action. The momentum for the implementation process must ultimately pass to private industry, however, since the agricultural sector is largely a market economy driven by individual firms and businesses. That is, the sales, investment, production, processing and similar actions that will ultimately lead to the preferred future must be carried out in the marketplace by private firms, and cannot be simply ordained or orchestrated through the public sector.

The Next Step

The five priority areas designated in AG-2000: Economic Strategies for Washington Agriculture represent bold initiatives. The successful long-run achievement of even one of these strategies in the climate of a competitive, market-driven agricultural economy will be difficult, requiring broad-based support, inspired leadership, and patience. Preoccupation with short-term issues can erode the commitment to long-term objectives with distant future pay-offs.

The key elements of the AG-2000 strategies need to be iden-

tified and developed to provide the initial vehicles for making the plans operational. Preliminary review of the five strategy areas by the advisory committee generated several focal issues listed in Table 1.3 (on page 6), each associated with the strategy area abbreviated in parentheses.

The purpose in evaluating and refining these focal issues is to determine the priority topics that should be brought to the attention of decision and policy makers in the near future. Such priority issues, appropriately supported with factual background information, will logically evolve into the near-term activities supporting the long-term strategies. Thus, if new financing instruments, technology priorities, and other programs are crucial to reaching the preferred future—and the AG-2000 project indicates that they are—these issues need to be endorsed and formulated as policy initiatives and placed on the agenda of public and private decision makers for action.

Table 1.3. Focal Issues Identified in the Strategic Plans

1. **Build long-term contacts from foreign country development projects and overseas business activities (MARKETING)**
2. **Target countries/products for in-depth market analysis (MARKETING)**
3. **Develop a coordinated input in the General Agreement on Tariffs and Trade (GATT) (MARKETING)**
4. **Establish a university-industry task force on technology assessment (TECHNOLOGY)**
5. **Establish a center for agricultural innovation (TECHNOLOGY)**
6. **Establish a private-public task force on economic problems and opportunities in the processing industry (VALUE-ADDED)**
7. **Evaluate the impact of the B&O tax on existing and potential processing firms (VALUE-ADDED)**
8. **Develop an active and aggressive recruitment program for value-added firms (VALUE-ADDED)**
9. **Support a leadership training program in commercial agriculture and agribusiness (INFRASTRUCTURE)**
10. **Improve the state's ability to meet debt and equity financing needs in agriculture (INFRASTRUCTURE)**
11. **Encourage and expand college internship programs and adult education in agricultural business (INFRASTRUCTURE)**
12. **Establish a clearinghouse for investment opportunities in agriculture (INFRASTRUCTURE)**
13. **Assess the adequacy of the core transportation system serving agriculture (INFRASTRUCTURE)**
14. **Assess economic development needs of distressed agricultural areas (INFRASTRUCTURE)**
15. **Establish multi-interest coalitions on natural resource use (RESOURCES)**

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Introduction

Washington's agricultural industry is a study in diversity. The state boasts one of the most diverse bases of crop and live-stock production in the world. Accompanying the production sector is an equally diversified set of financing, processing, transportation and marketing organizations that comprise the "agribusiness" component of the industry.

As a consequence of the diversity in this industry there is not a singular, concise identity that adequately describes the breadth of Washington agriculture. Attention most often is focused on problems or developments specific to a subset of the overall agricultural sector. For example, the farm financial "crisis," chemical use, and crop surpluses have been important topics in agriculture during recent years, but they are not uniform issues across the entire industry.

Only about five percent of the U.S. population is involved in production agriculture, so the majority of consumers are largely uninformed about the intricacies of this industry. Agriculture has acquired the unflattering and inaccurate profile as an industry of stoic agrarians continually beset by problems, culturally fixed in the 19th century, and requiring periodic financial support from the Treasury in order to remain viable. To the contrary, Washington agriculture is a technologically advanced, economically viable but inherently

volatile industry, with a relatively complex structure that most consumers take for granted.

An accurate statement of current circumstances and future potentials in Washington agriculture is necessarily a lengthy one. Table 2.1 provides a broad overview of the external and internal factors affecting this industry in the mid-1980's. This summary is categorized in seven topic headings, ranging from traditional farm-level production variables, such as weather, to emerging issues in the international economy, such as third world debt.

Overview of Washington Agriculture

Generalizing from Table 2.1, Washington agriculture can be categorized from several perspectives such as: 1) the commodities produced (apples, potatoes, etc.); 2) function (production, marketing, etc.); or, 3) institution (farms, processors, etc.).

These perspectives provide some vital statistics about the industry. There are an estimated 38,000 farms in the state. A farm is defined as an enterprise with annual agricultural product sales of \$1,000 or more. Total land in farms covers 16 million acres in Washington, producing upwards of 100 different commodities, depending upon the refinement of crop categories.

The total value of Washington agricultural production was estimated to be \$3.06 billion

at the farm level in 1986. When subsequent processing, distribution, and marketing components are considered, the annual gross total revenue of Washington agricultural commodities from sales at the consumer level exceeds \$8 billion. Agriculture, along with forest products and transportation equipment, are Washington's leading basic industries. The value added (net of costs) in agriculture alone accounted for 5.4 percent of the Washington gross state product, higher than both forest products (3.9 percent), and aerospace (4.6 percent), according to the 1982 Washington Input-Output Study. In addition, agriculture carries part of the public finance burden due to the property tax structure, which is particularly important to the provision of public services in rural areas.

Forty commodities account for 87 percent of the total production value at the farm level, and the top six (milk, apples, cattle and calves, wheat, potatoes, and hay) accounted for 63 percent of the value of farm marketings in 1986. Thus, although a wide variety of agricultural commodities are grown in the state, the value of production—as well as aggregate employment and export earnings potential—is concentrated in a select group of products.

Structure. The structure of the agricultural industry is characterized by a large number of producers, selling to a much smaller number of processors, handlers, or marketers, who in turn sell the finished products

Table 2.1. External & Internal Factors Affecting Washington Agriculture

I. Agricultural Production and Processing

- Production Base in Crops & Livestock
- Chemical Use/Regulation
- New and Alternative Crops
- Farm Labor Availability
- Transportation Cost and Availability
- Plant and Animal Disease/Weed Control
- Input Availability
- Costs of Production
- Research/New Technology
- “Value-Added” Agricultural Products
- Growing Conditions: Climate, Geography, Weather, Irrigation
- Vertical Integration of Production, Processing & Marketing

II. Markets and Competition

- Domestic Demand for Agricultural Products
- International Trade
- Export Markets
- Domestic and Foreign Competition
- Market Research & Development
- Promotion & Advertising
- Marketing Alternatives
- Comparative Advantage & Competitiveness
- Marketing Infrastructure
- Trade Barriers

III. Resource Management and Conservation

- Soil Conservation
- Water Quality, Use, Conservation & Management
- Land Use Planning
- Energy Use in Agriculture
- Irrigation Development
- Multiple Use of Agricultural Lands

IV. Farm/Firm Financial Health

- Profitability
- Financial Security/Risk
- Availability of Capital/Financing
- Farm Failures/Financial “Crisis” in Agriculture
- Debt Repayment Capability
- Land Value
- Rural Bank Failures
- Farm-Agribusiness Interdependencies

V. Governmental Legislation

- National Agricultural Policy
- Federal Farm Programs
- Agricultural Subsidies/Government Costs
- Protectionistic Trade Legislation
- Regulatory Controls: Federal, State, and Local

VI. U.S. Agricultural Economy

- Changing Structure of Agriculture
- Importance of Agriculture in the U.S. Economy
- Chronic Overproduction/Excess Capacity
- Economic Recession in Rural Areas
- Dietary Trends and Concerns of Consumers
- Consumer Food Costs & Expenditures

VII. Macroeconomic Linkages

- Federal Budget Deficit
- Trade Deficit
- Tax Structure
- Interest Rates
- Inflation
- Exchange Rates
- World Debt
- World Economic Growth

overall market supply and demand conditions.

Among producers, there is a distinct structural pattern in farm size. The trend in recent years has been towards a smaller number of very large farms, and a larger number of very small farms. The middle-size farm between these extremes has largely disappeared. Nationally, about 80 percent of total cash receipts from farm sales comes from only 20 percent of all farms. In other words, 80 percent of all farms account for only 20 percent of the total cash receipts in agriculture. The large, commercial farm enterprises are the major suppliers of agricultural products. More numerous, smaller-sized farms can be important in augmenting supply, however, especially in filling local, direct marketing channels.

Markets. Washington agriculture is an important export-based industry. About 75 percent of the state’s agricultural commodities are sold outside Washington. This commerce provides export earnings that can be used back in the state. Both domestic markets in the United States (interregional trade) and export markets (international trade) are important agricultural market outlets in this regard, accounting for roughly 11 percent of Washington’s total exports by value. Trade patterns are largely determined by the state’s comparative advantage in crop production and processing, along with transportation costs into given markets.

to a large number of consumers. The output of Washington’s wheat growers, for example, is handled by less than ten major grain companies operating terminal elevators in Portland and the Puget

Sound area. From these elevators, Washington wheat moves into marketing and processing channels that ultimately distribute the finished wheat food products to consumers around the world. Given the

large number of producers, few individual farm firms are large enough to influence the market through their own separate action. Thus, most producers are “price takers,” with prices determined by

As surface transportation costs from Washington to eastern U.S. population centers have increased, the state's agricultural shippers have focused more attention on Pacific Rim markets such as Japan, South Korea, People's Republic of China, Taiwan, Hong Kong, and Singapore. Washington appears more favorably located to ship competitively into these overseas markets, relative to distant U.S. markets. In 1985, an estimated 26 percent of Washington's agricultural commodities amounting to \$752.5 million worth of crop and livestock products was exported to foreign markets, based on Washington farm value. A select group of agricultural commodities makes up most of Washington's foreign export sales value. Together, wheat, dairy products, apples, hops, peas and lentils, and hay accounted for 81 percent of Washington exports by value in 1985. Wheat alone accounted for over half (53 percent) of the state's agricultural exports.

Domestic markets are equally vital to Washington agriculture, since sales to U.S. consumers still account for nearly three-quarters of the state's agricultural income. Due to transportation costs and competition from other regions, sales of some basic Washington commodities such as milk are limited primarily to Washington and neighboring states. More specialized products relatively unique to Washington, including apples, hops, spearmint oil, and red raspberries, are marketed nationwide. Weather and

growing conditions in Washington result in distinct harvest periods for certain commodities such as sweet cherries. Nationwide sales opportunities for these crops take advantage of market "windows" for Washington crops, relative to production from competitors in other areas.

Despite Washington's diverse crop base and advantageous geographical location for exporting, the state faces strong market pressure from both U.S. and foreign competitors. Producers and processors continually seek new technology and procedures that will reduce per unit costs. These cost-reducing technologies often are based on efficiencies attainable from larger, more specialized operations. The search for lower per unit production costs is a major factor contributing to increasing firm size in agriculture.

Value-Added. The term "value-added" refers to the value added to a good or service, primarily as a result of additional processing such as handling, manufacturing, packaging, etc. All agricultural products incur some degree of processing before reaching their final use. The value added varies by commodity, depending upon product form. The farm value of wheat products at the retail level—bread, for example—is only about seven percent, meaning that 93 percent of the retail value is "added" to the raw product. The farm share of retail price for other agricultural products ranges from less than 20 percent for processed fruits

and vegetables, to about 50 percent for meat and dairy products, and reaches a high of around 65 percent for eggs. These percentages indicate that significant value is added to agricultural products in processing and handling. In most cases, farmers receive only a modest share of the retail food price, averaging about 30 percent during 1986 for a representative consumer market basket of goods.

The processing activities not only add value to the agricultural products, but also create additional jobs and income for the state's economy. Not all agricultural processing is performed in the state, however; many commodities are shipped out of the state in raw product form and the subsequent value added elsewhere. Major commodity groups processed in the state include fruits and vegetables, and dairy and meat products.

Financial Condition. Agriculture in general suffered with the rest of the U.S. economy as a result of the recession during 1982. The financial problems in agriculture were intensified by declining asset values, high real interest rates, low commodity prices, and large crop surpluses. Debt repayment capability worsened as interest costs increased, while revenues and asset values declined. By 1987, however, the solvency of Washington farmers and ranchers had begun to improve, the result of intensive financial management and the attrition of roughly 1000 farms and ranches

(2.6 percent of total) between 1983 and 1987. Current estimates are that about one-third of all Washington farms and ranches are debt-free, and roughly 50 percent have debt-to-asset ratios of less than 0.4. This leaves only about 17 percent of Washington farms and ranches with debt-to-asset ratios exceeding 0.4, a status generally regarded as an indication of possible financial stress. A still smaller group, perhaps only five percent, face debt-to-asset solvency ratios greater than 0.7, a condition which usually signals severe financial problems.

While the solvency of Washington's agricultural firms has stabilized if not improved, the overall profitability in this sector has been hampered by poor market conditions. According to a 1987 survey by the Washington Agricultural Statistics Service, 59 percent of all farms and ranches in the state had negative cash flows (annual combined operating, interest, and capital expenses exceeded annual farm income). Livestock enterprises generally exhibited the poorest liquidity situation, while cash grain and dairy farms were more favorable. Generally, small operations tend to have a higher incidence of negative cash flow, and these farms rely more heavily upon off-farm sources of income to augment cash flow. Off-farm income is an important source of revenue for many farms and ranches, especially smaller enterprises. Overall, off-farm income accounted for about 18 percent of total income for Washington

farmers and ranchers in 1986.

Profitability. Sustained, long-term profitability in agriculture is limited to some extent by the competitive structure of the industry. That is, the relative ease of expansion or entry into farming and ranching draws additional resources into production whenever profit incentives are present. Historically, high prices for a given crop in a given period will lead to increased supplies and often lower prices in subsequent periods. Certain annual crops such as storage onions are notorious in this regard.

The net effect of such competitive pressures is to reduce growers' returns to the break-even point over the long-run unless there are barriers to entry. Where short-term supply responses are not possible, profitability frequently leads to increased fixed asset values as producers bid up prices for land, equipment, allotments or quotas, and breeding stock. The higher asset values, in turn, increase production costs and ultimately erode profits.

Because the basic factors of production in agriculture (land, owner's labor, and machinery, especially) tend to be relatively fixed in the short-term, producers are less apt to immediately curtail production in the event that prices fall. This "asset fixity" condition in the supply response, along with government price support programs creates periodic market gluts and depressed prices of certain agricultural products.

These over supply conditions can be perpetuated for several years in the case of storable commodities such as grains.

Government Programs. Federal farm programs were designed during the depression of the 1930's to stabilize agricultural production, prices and farm incomes. Since then, the farm program has evolved into complex, costly, federal legislation with an uneven influence on Washington agriculture. Only a limited number of basic crops in Washington are directly covered by the farm program, primarily wheat and feed grain, dairy, wool, and honey. The farm program also impacts the livestock industry due to its influence on the price of feed grain.

There is a common misconception that farmers and ranchers derive most of their income from government support payments. To the contrary, in aggregate Washington producers derived only about 8.3 percent of farm and ranch income from government support payments in 1986. This level of dependence is slightly above the U.S. aggregate of 7.5 percent, and reflects Washington's reliance upon two important government program crops: wheat and dairy.

The farm program provides participating growers with "safety net" income protection, and directly or indirectly supports the commodity price at a specified level. In exchange, participating growers must abide by certain production

guidelines, such as reduced acreage, which are designed to limit supply and ensure certain conservation practices. These programs have proved less effective and very expensive to taxpayers in recent years, and there is widespread sentiment to reduce government involvement in agriculture. Paradoxically, the farm financial crisis of the mid-1980's forced greater reliance on price subsidies and income supports for producers of some commodities, such that policy makers have been hesitant to abruptly curtail farm program benefits.

The Macroeconomy. Perhaps the greatest change in U.S. and Washington agriculture over the past decade has been the "internationalization" of this industry into the U.S. and world economy. World economic conditions exert direct influence on the state's agriculture via "linkages" between agriculture and the macroeconomy. Two important linkages in this regard are interest rates and exchange rates. These linkages undermine sector-specific commodity programs here and abroad by exposing agriculture to the economic adjustments brought on by market conditions in the rest of the world. For example, high U.S. support prices for wheat during 1981-84 allowed foreign competitors to underprice U.S. producers, and thus capture a greater share of the world market. Similarly, economic developments throughout the world, such as crop failures or debt problems of developing countries, are transmitted back to Washington

agriculture in terms of commodity prices, demand, supply, and competitiveness. These issues are often beyond the immediate control of U.S. policy makers, much less the decision makers in Washington State.

The Future for Washington Agriculture

The overview of Washington agriculture depicts a diverse industry facing ongoing changes in technological and economic conditions. The future of agriculture is often presented as a projection of past trends, and this has led to some serious planning failures, such as the 1981 federal farm bill, or the overextension of credit by farm lending institutions in the late 1970's. While the past twenty years have provided a now understandable chronicle of the reasons behind prosperity and failure for this industry, it is unlikely that the next twenty years will be a simple replay of the past.

Certain factors, such as weather, exert a relatively constant if not predictable influence on agriculture, and the consequences are anticipated in the decision-making process. Other new and developing issues such as the federal deficit or genetic engineering are less understood, and represent the genuinely dynamic features of agriculture in Washington's future.

Emerging Issues. A set of "emerging issues" can be distilled from the internal and external environment facing

Table 2.2. Emerging Issues in Washington Agriculture

I. Excess Production Capacity in Agriculture

- Over-Reliance on Traditional Crops
- Decline in Asset Values
- Low Commodity Price
- Finding New and Alternative Crops

II. Markets and Competition

- Opportunities in International Trade
- The Importance of Domestic Markets
- U.S. Competitiveness in World Markets
- Developing Markets for New/Alternative Crops
- Promotion and Advertising
- Finding the Right Mix between Foreign and Domestic Market Sales

III. New Technology in Agriculture

- Biotechnology: Higher Yields, Lower Costs, New Products
- Coordinating Production and Market Research
- Commercializing Research Findings/Adapting New Technology

IV. Natural Resource Use and Conflicts

- Water, Soil and Chemical Use
- Regulatory Controls on Production Practices
- Environmental-Economic Conflicts

V. Rural Economic Development

- Dilemma of Agriculturally Dependent Rural Areas
- The Role of the “Family Farm”

VI. Agricultural Business

- Debt “Crisis”: Farm, Lenders, National, and World
- Expanding Value-Added Industry in Agriculture
- Equitable Taxing of Agriculture
- Availability of Seasonal Agricultural Labor
- Private Investment in R&D

VII. Consumer Interests

- Food Safety
- Dietary Trends, Health, and Nutrition

VIII. Government Policy and Regulation

- Govt.’s Role in Subsidizing Farm Income
- Protectionism: U.S. and Foreign

IX. Education

- Public Perceptions about Agriculture
- Education and Communication Needs in Agriculture

Competitiveness and success in the marketplace will require sensitivity to consumer demands, and “producing for the market,” rather than just producing. Aggressive pursuit of new market opportunities including export and specialized niche markets will require advanced sales expertise. In the absence of governmental support programs (a possibility, but not a certainty), producers will be less inclined to carry excessive inventories, and price variability in basic commodities may re-emerge as a chronic market problem, requiring greater emphasis on price risk management in sales decisions.

In the area of new technology, developments in biotechnology offer the potential for dramatic, but by no means certain, increases in agricultural productivity. Such possibilities are not limited to strictly yield-enhancing or cost-reducing technologies, but may also impact the proprietary rights to grow and market agricultural commodities in the future. This also suggests an increased importance of differentiated, rather than strictly homogeneous crops and food products in the future, as research focuses on products and processes fine-tuned to consumer demand.

A combination of the capacity to overproduce many existing traditional crops, concern for diversification, and increased recognition of specific market demands is expected to accelerate interests in new and alternative agricultural crops. Non-traditional areas such as nursery

Washington agriculture; these are listed in Table 2.2. These emerging issues are topics which appear to be aligned in the industry’s future, and are expected to exert significant, though uncertain pressure on farms, ranches and associated businesses in agriculture. Recognizing the uncertainty of their consequences, the emerging issues offer both opportunities and challenges that may require some proactive positioning and initiative at the present.

Long-range plans developed by the College of Agriculture and Home Economics at Washington State University—and echoed in similar long-term planning efforts from other groups—focus on a handful of top priority issues from the list in Table 2.2. These suggested priority areas for Washington agriculture include: 1) marketing; 2) advances in production and processing technology; 3) new and alternative crops; 4) water use and conservation; and 5) family and community well-being.

Impact on Agriculture’s Future. By combining current trends in Washington agriculture with the emerging issues identified above and in Table 2.2, future scenarios can be projected. One recurring theme in this regard is an expected continuing evolution in the structure of agriculture. This could mean fewer but larger commercial farms and ranches, with greater coordination and integration among successive production stages.

crops and aquaculture could play an important role in agriculture's future. The potential for new products also includes commodities that will serve as industrial raw materials, such as oils, resins, fibers, and alcohol.

Increasing environmental monitoring and concern is likely to prescribe a more restrictive path for natural resource use and conservation in Washington agriculture. Financial liability as well as environmental regulations could result in further restrictions or a reduction in resource use in agriculture, leading to higher per unit costs or lower productivity in some situations. Alternatively, more efficient use of existing resources due to technological advances and regulatory changes is expected to alleviate some problems.

Preferred Future Criteria.

Washington's agricultural future will be determined by key physical and economic variables such as those discussed above. In addition, the preferences or objectives held by individuals in agriculture will also exert a significant influence on future events.

The same diversity that characterizes the structure of Washington agriculture also exists in terms of preferred futures. Broad-based sentiments in agriculture representative of concerns about the future can be established, however, based on common personal and economic goals, and the business environment. The listing in Table 2.3 is a general set of

preferred futures representing a cross-section of interests from the Washington agricultural industry. There is some overlap and potential for contradiction in this list, indicating a continuing need for trade-offs in choices concerning resource allocation.

A dominant theme represented in these objectives is the preference for an efficient, market-oriented agricultural economy. This implies a declining reliance on government agricultural programs in many situations. Moreover, there is a strong belief that acceptable solutions to many problems in agriculture can be achieved through economic outcomes determined in the marketplace.

Strategies for Agriculture's Future

The foregoing diagnosis of Washington agriculture, along with a vision of likely future developments in this industry, establishes the framework for building a pro-active strategy for action. The purpose of this strategy is to maneuver Washington into a position where the state's agriculture can best take advantage of future economic development opportunities.

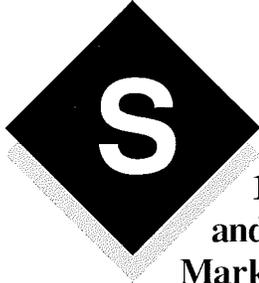
Long-term strategies might be identified to address every conceivable issue in the future of Washington agriculture. However, a directed focus is applied here in an attempt to identify those priority concerns consistent with key emerging issues and the preferred futures.

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Table 2.3. Preferred Future for Washington Agriculture

- 1. Become a market-driven economic community with reduced dependence on government policy.**
- 2. Develop a broad base of marketable commodities and appropriate markets.**
- 3. Increase the opportunity for profitability in the agricultural industry.**
- 4. Enhance the economic growth and improve the business environment of Washington's agricultural sector.**
- 5. Achieve an efficient use of Washington's resource base: land, labor, water, capital, and management.**
- 6. Obtain ready and efficient access to markets for agricultural inputs and products.**
- 7. Achieve a more stable level of prices, production, sales, and net returns to individual firms.**



Strategy Discussion Papers

1. Domestic and International Marketing

In 1986, the estimated farm level value of total agricultural production in Washington State amounted to slightly over \$3 billion. Since on-farm consumption of agricultural products accounts for only about one percent of Washington's farm and ranch output, virtually all of the agricultural output produced in this state is dependent upon marketing activities at some point. Just as the production activities in agriculture are vulnerable to a variety of risks, marketing decisions are also accompanied by uncertainty. Poor performance on either account can adversely affect the economic fortunes of the farms and businesses affected.

Of Washington's major manufacturing industries, only agriculture markets a significant share of total output within the state. Approximations based on farm level dollar values indicate that roughly 25 percent of Washington's agricultural output is sold to consumers within the state, 25 percent is foreign export, and 50 percent is sold in the rest of the United States. Agricultural sales outside the state have propelled Washington agriculture to become one of the state's major export-based industries. These exports provide an important source of earnings for the state's economy.

In this setting, the agricultural industry has a vital need for

responsive, efficient markets to provide outlets for the sale of raw and processed agricultural products. The AG-2000 strategic plan in domestic and international marketing directly addresses long-term needs in this area.

Long-Term Goal

The domestic and international marketing strategy is intended to develop and support a diverse market base for Washington food and agricultural products. The overall objective of the strategic plan in marketing is to increase sales and income earnings potential in Washington agriculture. The secondary objective is to provide market stability to prices and sales volume over time. Economic growth and profitability in Washington agriculture are important contributors to the health of the overall state economy, as well. The value added (net of costs) in agriculture accounted for 5.4 percent of the Washington gross state product, higher than both forest products (3.9 percent), and aerospace (4.6 percent), as estimated in the 1982 Washington Input/Output study.

Reaching these goals cannot be guaranteed in a competitive market. Rather, the focus of the marketing strategy effort is to create the environment that will enhance the opportunity to reach these goals. The marketplace should provide accurate, responsive signals to both producers and consumers concerning the allocation of agricultural commodities through price signals.

In a broader sense, marketing encompasses the range of activities that occur between the farm gate and the ultimate consumer. This includes the processing, distribution, and merchandising activities that are businesses and industries in their own right. The concern for a sound overall marketing system recognizes the need for efficient, economically viable firms in all marketing activities, to ensure that the overall system functions properly. Variables such as production costs, management, use of technology, and even luck determine profitability for the participants in the agricultural marketplace, but an efficient and responsive market is a necessary prerequisite.

Major Opportunities

Agriculture is by nature a productive process. But concern over costs, production decisions, cultural practices, and yields can relegate marketing to a secondary decision. Rather than reduce the importance of production-related issues, the needed change in agriculture is to elevate the importance of marketing research, skills, and decisions. For Washington agriculture, there appear to be distinct opportunities to expand sales of the diverse agricultural product base, capitalize on Washington's strategic location relative to world markets, and in better coordinating production with worldwide consumer demand.

The wide variety of agricultural products that are grown in

Washington is an important advantage in pursuing marketing opportunities (Table 3.1). Not only does the product diversity create an elaborate menu of offerings to the world's consumers, but it also reduces the state's dependence upon the economic fortunes of any single commodity. This diversity is made possible by the state's moderate climate and growing conditions, geographically distinct agricultural regions, the widespread development of irrigation systems, and a high level of management and entrepreneurial skills in this industry.

The diversity of Washington agriculture reveals a further balance in the makeup and importance of crops produced. Forty commodities accounted for 87 percent of the total farm value of production (\$3.06 billion) in 1986, and the top six (apples, milk, cattle and calves, wheat, potatoes, and hay) accounted for nearly two-thirds of farm marketings. The state's agriculture is represented by both large-scale production of bulk, homogeneous commodities, as well as an even larger selection of smaller, often specialized or high-valued commodities.

The major agricultural commodities in Washington share several similarities: 1) competitive, low-cost production; 2) a consistent, recognized, high-quality product; and 3) a significant, influential share of the market. Marketing strategies in these industries capitalize on these

strong points and may serve as useful guidelines for improving market performance of Washington's smaller-volume agriculture crops.

Competitiveness in world markets and trends in consumption suggest that the ability to differentiate or specialize individual agricultural products will be an important advantage in marketing, especially for enterprises seeking high-margin returns. On the other hand, large-scale, highly efficient, low-margin operations that produce bulk, homogeneous products will continue to be important providers of world food needs. Washington State has the product mix in agriculture to pursue both opportunities.

Depending upon the type or mix of commodities grown, differing marketing strategies will be appropriate. For Washington, the production expertise and marketing infrastructure already exist to support a diverse base of agricultural commodities and products. The opportunity in this case is to increase the focus on marketing activities—promotion, distribution, processing, and so forth—that are appropriate for specific demands. Specialized or limited “niche” markets may represent marketing opportunities overlooked by traditional bulk commodity sales. A single marketing strategy will likely be ineffective in straddling the extremes of bulk low-margin commodities and differentiated high-margin products. Thus, flexibility in

Table 3.1. Principle Washington Agricultural Commodities, 1982-86

Commodity	5-Year Average Value of Production
1. Wheat	\$497,274,000
2. Milk	466,061,000
3. Apples	353,185,000
4. Cattle & Calves	318,801,000
5. Potatoes	241,383,000
6. Hay	207,408,000
7. Barley	115,712,000
8. Nursery/Greenhouse	96,800,000
9. Hops	79,073,000
10. Corn, Grain	59,680,000
11. All Pears	59,657,000
12. Eggs	59,369,000
13. Sweet Cherries	46,043,000
14. Asparagus	37,562,000
15. Chickens	33,520,000
16. Grapes	28,841,000
17. Corn, Silage	27,836,000
18. Sweet Corn	26,611,000
19. Green Peas	23,294,000
20. Mint	21,758,000
21. Lentils	17,546,000
22. Onions	17,424,000
23. Dry Peas	16,911,000
24. Aquaculture	*16,075,000
25. Alfalfa Seed	12,332,000
26. Dry Beans	10,894,000
27. Bluegrass Seed	10,882,000
28. Carrots	10,155,000
29. Red Raspberries	9,473,000
30. Hogs	8,526,000
31. Peaches	7,522,000
32. Strawberries	6,949,000
33. Mink	6,867,000
34. Mushrooms	5,568,000
35. Cranberries	5,023,000
36. Oats	3,236,000
37. Sheep & Wool	2,976,000
38. Lettuce	2,949,000
39. Prunes	2,823,000
40. Wrinkled Peas	2,498,000

From data compiled by the Washington Agricultural Statistics Service
*Washington State Department of Fisheries.

marketing services and strategies may provide an additional advantage.

To support marketing strategies tailored to individual crops or products, it will be necessary to obtain better information regarding consumer preferences for agricultural products. About 25 percent of Washington's agricultural output is sold in foreign markets at the present. The opportunity to expand sales further can be enhanced by a better understanding of the tastes and preferences of consumers in overseas countries. In addition to Washington's existing commodities, marketing opportunities may be enhanced by focusing on new and alternative crops and products that cater to specific, predetermined markets.

A better understanding of consumer demand also opens the potential for improvements in non-price competition which is an important means of differentiating agricultural products. The geographical growing conditions specific to Washington State provide distinct advantages in achieving superior quality in many agricultural products grown here, including red delicious apples, sweet cherries, red raspberries, and many others. Favorable growing conditions help build a reputation for high or distinctive quality attributes that differentiate Washington agricultural products from those in competing regions. In some cases, other states may

have lower costs or higher volume production, but Washington growers are able to successfully compete because of a superior quality reputation. Non-price competition involving attributes such as quality, reliability, distribution network, and responsiveness to consumer tastes and preferences should be used to the advantage of the state's producers and processors in establishing marketing strategies.

Although Washington's geographical location has long posed a disadvantage in serving eastern U.S. population centers, the location is now proving an advantage in accessing the expanding world markets in Asia (Figure 3.1). The location advantage is due to the lower shipping costs associated with moving Washington agricultural commodities into Asia, compared to the shipping costs incurred by states farther east or south. A second benefit of Washington's strategic location in world markets relates to the "critical mass" associated with a major world trade center located here, including the Puget Sound and Columbia River ports. These trade centers facilitate the flow of commerce both out of and into the United States. A large volume of trade creates the infrastructure necessary to efficiently conduct international business which capitalizes on such attributes as low-cost and timely ocean freight service, financing, information, as well as the intercultural contacts that enhance international trade possibilities.

Major Challenges

In many regards, the same factors that create opportunities for marketing Washington's agricultural commodities also present some difficult challenges. The essence of successful marketing is competition and agriculture is a globally competitive industry. This is largely attributed to the ease of entry into agricultural production as well as the increasing transferability of technology that can be used to improve productivity. In unregulated, competitive markets, sustained profits in any given agricultural sector provide a natural incentive to increase production. Increasing output thus puts more product on the market and ultimately lowers prices. As prices fall, profits decline such that in the long-term sustained excess profits are very rare in agriculture.

In situations where entry into agriculture is limited either by regulation or natural factors, excess profits frequently are bid into the major factors of production such as land. In this case, production costs rise as land values rise, again eroding long-term profits.

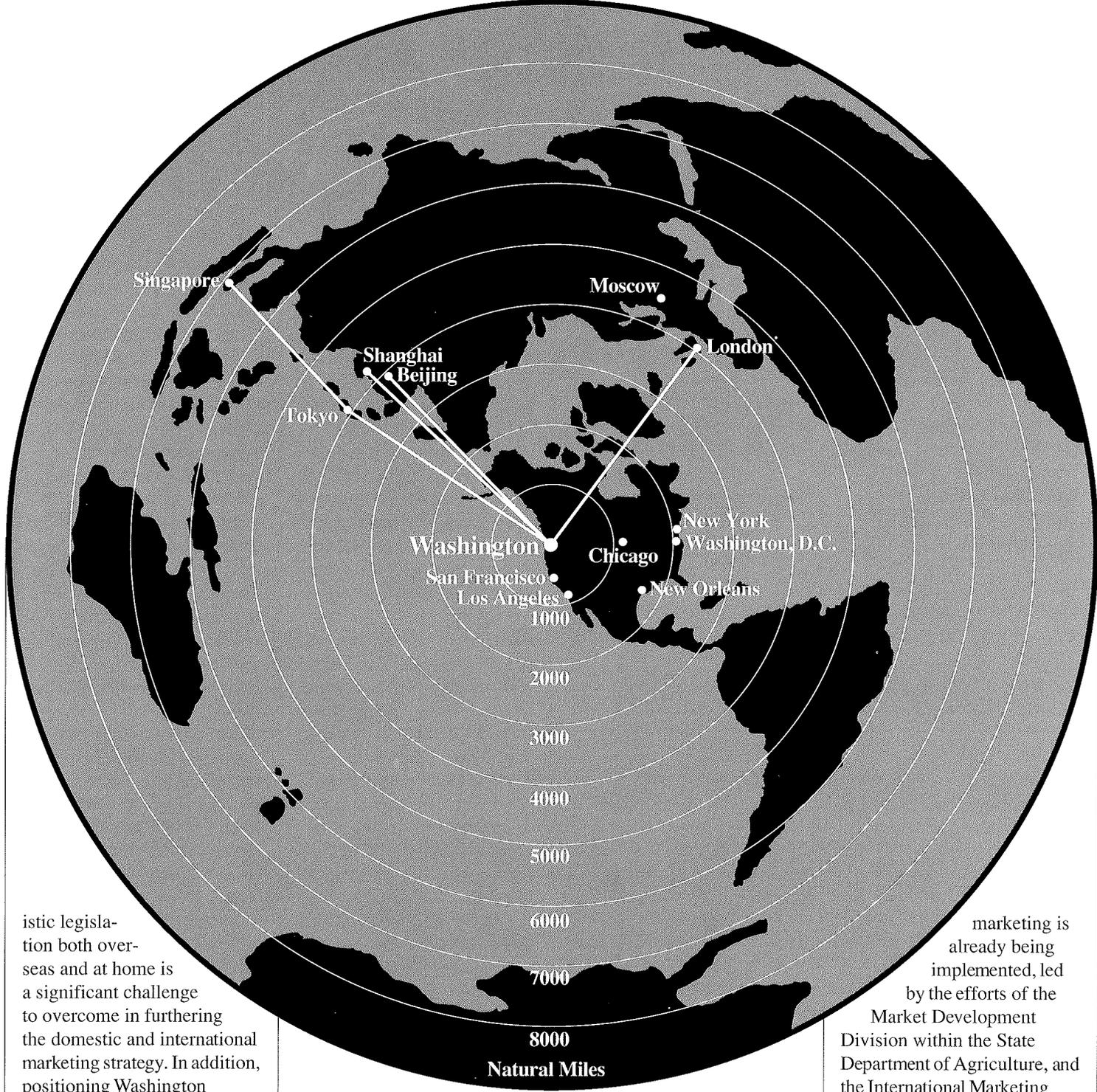
These long-term competitive forces work at all levels of production: local, state, regional, national, and increasingly, international. This makes it very difficult to "insure" profitability in agriculture. The solution is therefore to remain competitive through efficient operations, rapid adaptation of new technology, and responsiveness

to consumer demands. Maintaining competitiveness also relies heavily upon the supporting infrastructure in agriculture for functions such as research, education, logistics, and financing.

As discussed under the opportunities section, the market potential for differentiated or specialized agricultural products sold in niche markets is an attractive marketing strategy. This strategy has its restrictions, however, in that niche markets are often limited in their potential to absorb increasing output. The challenge thus becomes one of managing supply in agricultural production to meet demands. This same challenge applies to many Washington agricultural commodities, wherever excess production capacity exists.

Marketing logistics also pose special challenges to expanding trade opportunities. Post-harvest handling techniques must be coordinated between the Washington production practices and the distribution and merchandising practices of importing countries. Further investment in the marketing infrastructure covering services such as storage, foreign labelling and packaging, and specialized transportation needs may be necessary.

Particularly with international sales, tariff and non-tariff trade barriers present formidable obstacles to the efficient workings of a competitive market. Arbitrary protection-



Source: Washington State Economic Development Board

Figure 3.1. Washington's Strategic Location in the World Market

istic legisla- tion both over- seas and at home is a significant challenge to overcome in furthering the domestic and international marketing strategy. In addition, positioning Washington agriculture to adapt to foreign merchandising patterns, such as state trading agencies, terms of sale, and dispute resolution will be necessary. Although the Washington agricultural industry has a long history of dealings in international trade, not all segments of the agricultural community are equally schooled in marketing techniques. In some cases, changes in attitude may be

necessary to provide the responsive, adaptive production practices that will support marketing efforts.

As a final challenge, time and expense will be required to find and develop new profitable crops. The time requirements

and funding costs for research alone are significant and positive results cannot be guaranteed.

Components of the Strategy

The AG-2000 strategy in domestic and international

marketing is already being implemented, led by the efforts of the Market Development Division within the State Department of Agriculture, and the International Marketing Program for Agricultural Commodities and Trade (IMPACT) Center at Washington State University. The organization and output of this effort in food and agricultural market development involves several different entities, including the private sector, as illustrated in Figure 3.2. The organizational structure in Figure 3.2 shows working relationships and market support services available at the

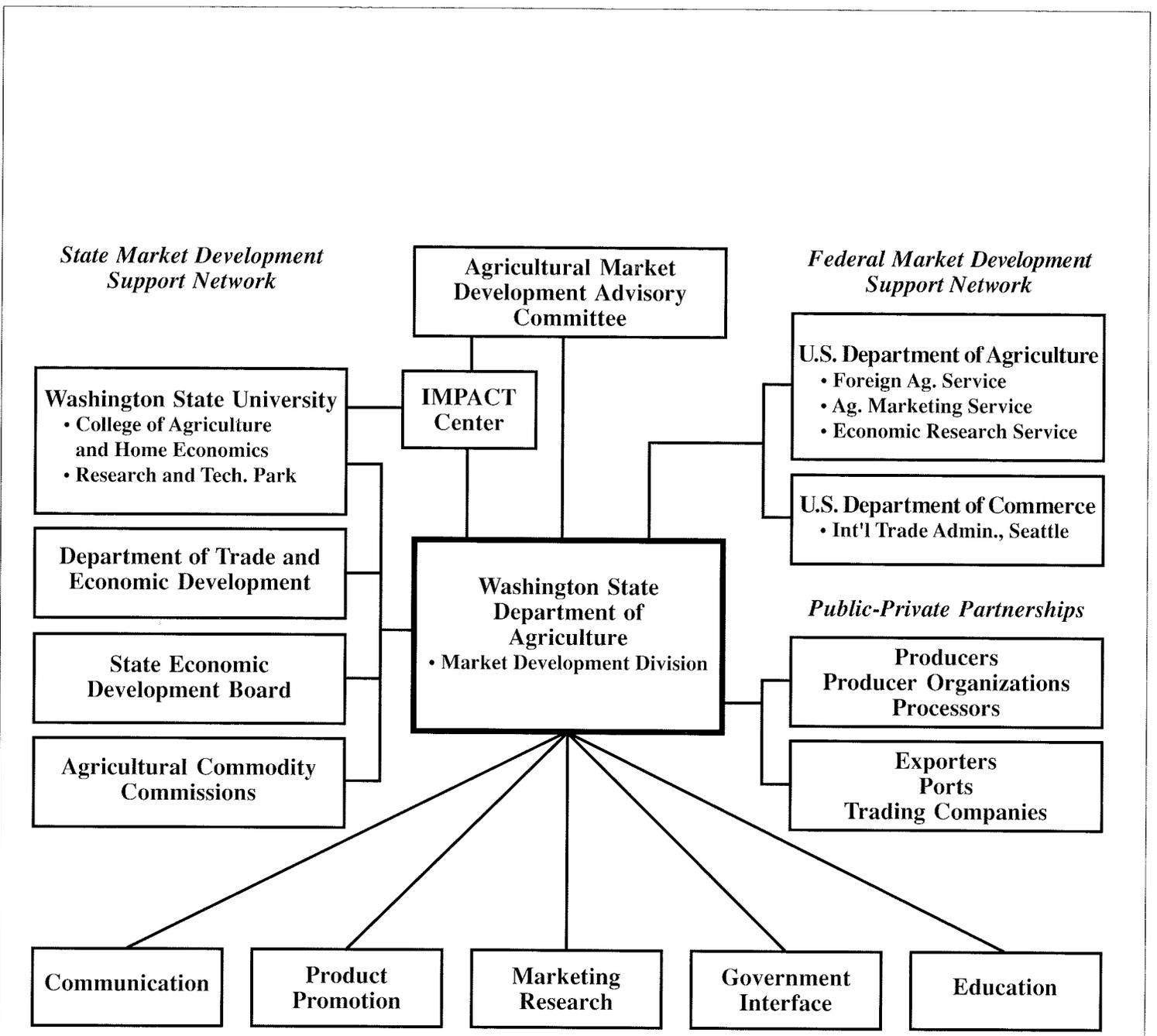


Figure 3.2. Domestic and International Market Development

present time: 1) communication; 2) product promotion; 3) market research; 4) government interface; and 5) education.

The organizational framework in Figure 3.2 illustrates a key feature of successful strategy implementation — leadership. Although there is broad participation in and contribution to this plan, the Washington State Department of Agriculture has

assumed a central responsibility in carrying forward the strategy for domestic and international marketing. This role provides the coordination, communication, action, and momentum necessary to make the strategy operational.

In the AG-2000 strategy, the objective areas of the domestic and international marketing strategy focus on five issues

that are basically refinements and extensions of the activities listed in Figure 3.2. These five objective areas and suggested activities are listed in Table 3.2

Market Information. Over the longterm, a well-functioning system of market information will be required to support competitive marketing. The activities listed in Table 3.2 include the basic compilation

and maintenance of market information data, development of a systematic trade leads program for both foreign and domestic markets, and a concerted effort to provide market intelligence beyond basic price and quantity information. Market intelligence might be developed from existing contacts arising from foreign economic development programs sponsored by

<p>Washington State-affiliated agencies such as university projects, as well as cultivating more systematic market intelligence from on-going commercial business activities.</p> <p>Market Analysis. Market analysis objectives relate directly to those activities that monitor and evaluate consumer demand for both domestic and foreign consumers. Such market analysis can also be designed to provide suggestions on favorable marketing alternatives, assessment of</p>	<p>agriculture's competitiveness, and ongoing assessment of potential marketing ventures. Given the breadth of commodities produced in Washington, as well as the vast market potentials here and around the world, prioritization of both market and commodity analyses must be made, based on judgments of the likelihood of success of potential marketing ventures.</p> <p>Product Development. A necessary complement to the market analysis objective</p>	<p>discussed above is an effort in the area of product development to capitalize upon opportunities identified in market analyses. An important activity in this regard is a formalization of the process for identifying and assessing new and alternative crops and products. Preliminary evaluation of new crops and products is needed to guide more in-depth development projects. The product development activities should include an assessment of the market potential and production research on these products to</p>	<p>identify and strengthen the competitive potential of Washington production. Finally, explicit steps leading to the commercialization of promising new crops and products is essential to bring the fruits of the market research and product development into commercial agricultural channels.</p> <p>Product Promotion. Having identified, analyzed and developed promising marketable agricultural products, the next objective is to provide the promotional support that will ensure widespread exposure of these products to potential buyers. Promotional costs that might otherwise be too high for individuals can be shared by continuation of the proven success of joint public-private partnerships in trade missions and food shows, coordinated promotional activities utilizing complementary product relationships, state generic brands, and shared trade facilities. Carefully designed advertising and public relations based on market intelligence and analysis also contribute to this objective area.</p> <p>Marketing Support. All of the objectives identified in the domestic and international marketing strategy are designed to enhance the competitiveness of the private sector. Ultimately, private firms and businesses are the entities that make the marketing decisions. To directly assist the private sector, a series of ongoing activities is suggested in order to ensure necessary marketing support. A thorough</p>
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Table 3.2. Domestic and International Marketing Strategy

1. Objective Area: Market Information

Activities:

- A. Compile and maintain commodity-specific data bases covering price, quantity, origination and destination statistics relevant to marketing decisions
- B. Develop and institute a trade leads program—foreign and domestic markets
- C. Develop and institute a market intelligence program
- D. Develop market contacts from ongoing foreign development and business activities

2. Objective Area: Market Analysis

Activities:

- A. Conduct consumer demand studies
- B. Prepare forecasts of market trends
- C. Evaluate marketing alternatives
- D. Assess competitiveness of Washington and competing agricultural industries
- E. Assess risk of potential marketing ventures

3. Objective Area: Product Development

Activities:

- A. Formalize process of identifying and assessing new and alternative crops and products (NACP)
- B. Assess market potential of NACP
- C. Production research on NACP
- D. Pursue commercialization of NACP

4. Objective Area: Product Promotion

Activities:

- A. Continue joint trade missions and shows
- B. Target advertising and public relations

5. Objective Area: Marketing Support

Activities

- A. Act on priority ITAAC recommendations; joint WSDA-DTED trade offices
- B. Provide sales counseling and trade services
- C. Promote efficient governmental processes and regulations
- D. Promote equitable trade policies; negotiate reduction of trade barriers
- E. Enhance marketing infrastructure
- F. Provide education and training in marketing practices and decisions

assessment of Washington's international trade development programs has been provided by the International Trade Assistance Advisory Committee (ITAAC) and several recommendations are made concerning overall market support efforts in this area. A common theme throughout the recommendations is the need for more effective coordination of existing public and private trade development programs in the state. Of specific interest to agriculture is a need for additional overseas representative offices, perhaps shared jointly between the Department of Agriculture and the Department of Trade and Economic Development. The ITAAC report found that there is relatively little that Washington is not doing presently in the area of marketing support when compared with other states. This positive endorsement suggests a continuation of existing support programs including: sales counseling and trade services, education and training programs, government-to-government services, and the promotion of equitable trade policies. A crucial issue regarding the latter is the development of a coordinated input into the ongoing discussion concerning the General Agreement on Tariffs and Trade (GATT).

IMPACT Center. The Market Development Division of the State Department of Agriculture plays an important role in coordinating and supporting many of the

explicit activities as discussed above. An equally vital role is offered by the IMPACT Center at Washington State University. As indicated in the AG-2000 marketing strategy objective areas and associated activities, the IMPACT Center (along with research conducted at other universities and in the private sector) is a key component in identifying and designing marketing strategies for the agricultural industry. This includes market analysis and new crops research. Furthermore, IMPACT has an important role to play in disseminating research findings and providing general educational support in the area of marketing.

Public-Private Partnerships.

Lastly, the importance of effective public-private partnerships in carrying out marketing activities must be emphasized. The educational, research, and support services offered by public agencies must ultimately be carried forward by private sector actions to achieve the goal of increased income and profit potentials. As a result, private interest, ranging from individual producers to agribusiness corporations, must be involved in every step of the AG-2000 marketing strategy. State commodity commissions, grower organizations, advisory committees, ports, and others are being called upon to play instrumental roles in providing necessary public and private partnerships.

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2. Commercializing Science and Technology

The most dramatic forces of change in our culture and economy arise not so much from the underlying pressures of weather, economics, or politics, as the revelations made possible through technological innovations. U.S. agriculture has experienced significant change in the past 50 years due to the mechanical innovations era of 1930-50, and subsequent innovations in chemical technology during 1950-70. Technological discoveries and innovations have increased the productivity of U.S. agriculture, expanded the offerings of goods and services, helped maintain low consumer food costs, and lessened the reliance upon human labor. These advances have radically altered the structure of the U.S. and world agriculture in this century and further advances can be expected to continue this evolution into the 21st century.

Recognizing that new science and technology is a major factor in determining the structure and economic development of agriculture, the AG-2000 strategy focuses on enhancing the rate of adoption and commercialization of new science and technology in agricultural production, processing, and marketing. The thrust of the strategy is on commercializing technology in agriculture, though recognizing that the research and develop-

ment activities are necessary prerequisites to this process.

Long-Term Goal

The long-term goal of commercializing technological advances is to increase profitability and competitiveness of Washington's agricultural industry through improved utilization of available resources.

Major Opportunities

The Office of Technology Assessment in the U.S. Congress released a report in 1986 that concluded American farmers will be offered new technologies over the next 15 years that could revolutionize animal and plant production. Furthermore, the adoption of these technologies is an important strategy for the United States in improving its ability to compete in international markets. The Office of Technology Assessment (OTA) characterized American agriculture as being on the threshold of a new era that will see major advances in biotechnology and information technology. Emerging agricultural technology areas identified in that report are listed in Table 4.1. The technologies identified in Table 4.1 focus on scientific advances in biotechnology and information, although it is recognized that some of these emerging technologies do not apply strictly to either category.

Washington's colleges and universities are important centers for research activities that can unlock the technological advances crucial to

productivity gains in agriculture. The full potential for both research and economic gains focuses on opportunities in technology transfer. Technology potentials are forecasts of the types of changes that are possible. But going from what is possible to what actually happens is a complex process. This is the area of technology transfer and, more specifically, the commercialization of technology into viable, economic applications. In this regard, the opportunity recognized in AG-2000 is to enhance the commercialization of technology in Washington agriculture. This focuses on the linkage between research and development of new technologies, and the business realities of the agricultural economy. The complexity of the basic research in areas like biotechnology may not have immediate applications in commercial agriculture. Agricultural producers and businesses may need assistance to understand research advances and envision commercial applications. Commercial business interests in agriculture can provide, in turn, useful ideas and input into technological research and development conducted by universities or private research firms. The opportunity in this setting is to establish communication between technology users and technology developers to focus on those innovations that will provide benefits to the agricultural economy and, ultimately, to all state residents.

Major Challenges

Technological advancements are clearly enhanced by aggressive investment and support of research and development. Nonetheless, scientific advancements cannot be produced on cue, even with strong research efforts. Many problems, both production and business-related, persist in agriculture. Moreover, technological advancement can be a blunt instrument for change. Displacing seasonal farm labor, pollution, and transferability of technology to overseas competitors are examples of the adverse consequences of technological change. As a related issue, productivity advances frequently contribute to increased supplies of the commodity in question, often with a price-depressing impact. Coordinating productivity gains with economic gains can prove elusive.

Maintaining adequate funding for public agricultural research (as well as providing initiative for private research) will continue to be a challenge. As scientific processes become more complex, research facilities more expensive, and project development times longer, justification and incentives will be needed to ensure ongoing technological research in matters relating to food and agriculture. Unlike large diversified U.S. corporations, most firms in production agriculture cannot justify or afford their own extensive research and development activities. Thus, an industry with numerous

small firms like agriculture lacks a uniform process for privately developing and commercializing new technology.

As a related issue, neither private nor public agricultural research organizations in the United States have a monopoly over technological advancements. Increasingly, foreign firms are providing the patentable commercialization of new technology. As illustrated in Figure 4.1, a majority of the agricultural patents in biotechnology in recent years have been held by foreign firms. Private U.S. corporations hold most of the remaining patents, with only minor controlling ownership by either the U.S. government or individuals. One implication of Figure 4.1 is that the

commercialization of many new technological developments will be controlled by either private U.S. corporations or foreign ownership, rather than public entities. The expensive and complex nature of research in biotechnology also suggests an increasing use of proprietary rights such as patents to control the use of new technology. Private firms are unlikely to invest in research and development efforts where the benefits are easily captured by competitors. While not uncommon in present agricultural applications such as proprietary seed, herbicides, and brand names, widespread use of proprietary rights in agriculture signals a movement away from reliance upon the public domain for new technology. Proprietary rights are

also an important mechanism for differentiating products and can be used as a means of controlling competition.

Components of the Strategy

AG-2000 suggests a three-pronged approach to formalizing the commercialization of science and technology in Washington agriculture. This is an integrated sequence that incorporates: 1) the forward looking assessment of new technology and potential applications in agriculture; 2) the scientific research necessary to develop useful applications of this technology; and 3) a commercialization process that builds university/industrial alliances to enhance the transfer of new science and technology. These three

Table 4.1. Emerging Agricultural Production Technology Areas

Animal

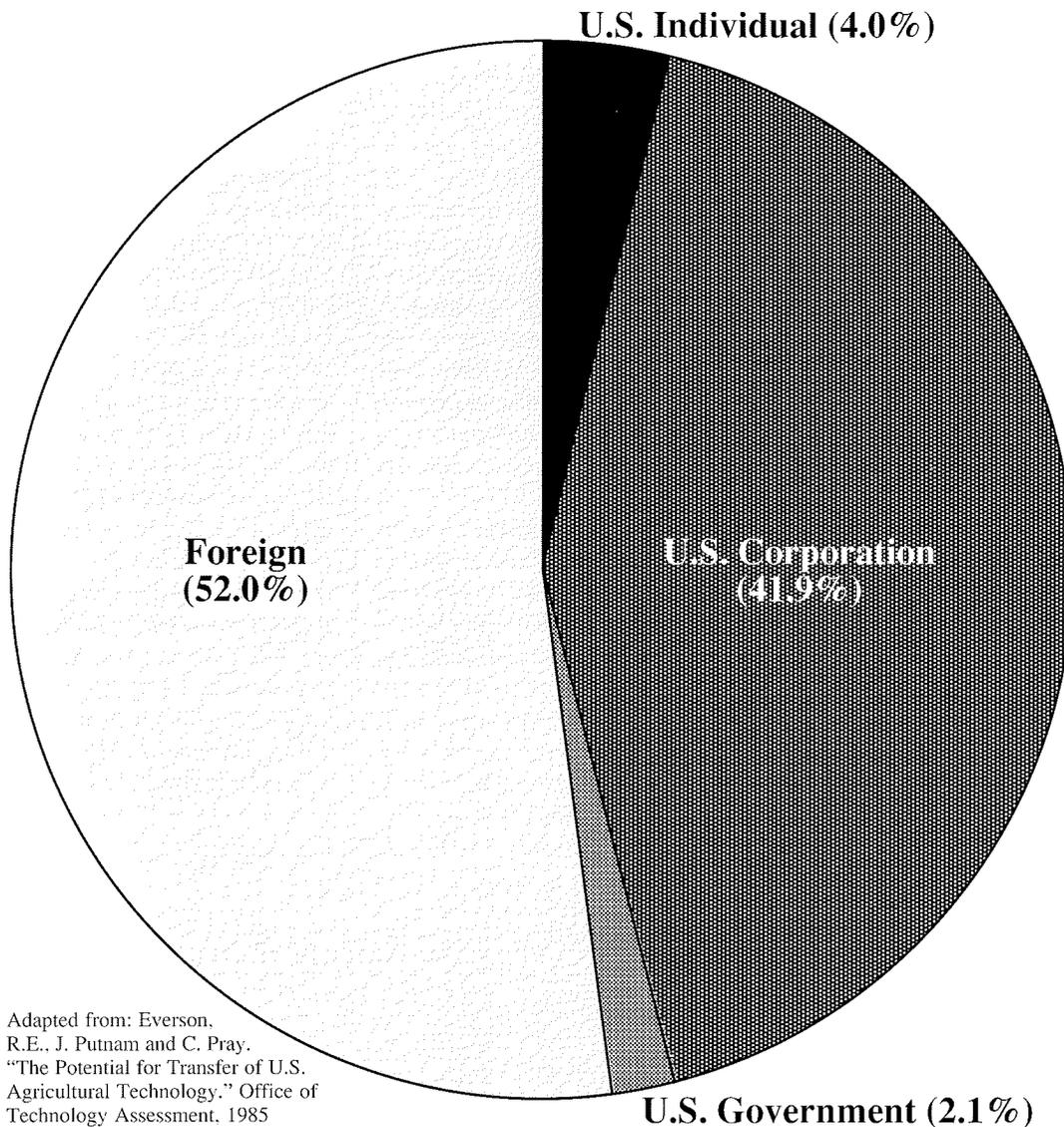
Animal genetic engineering
 Animal reproduction
 Regulation of growth and development
 Animal nutrition
 Disease control
 Pest control
 Environment of animal behavior
 Crop residues and animal wastes use
 Monitoring and control in animals
 Communication and information management^a
 Telecommunications^a
 Labor saving^a

Plant, Soil, and Water

Plant genetic engineering
 Enhancement of photosynthetic efficiency
 Plant growth regulators
 Plant disease and nematode control
 Management of insects and mites
 Weed control
 Biological nitrogen fixation
 Chemical fertilizers
 Water and soil-water-plant relations
 Soil erosion, productivity, and tillage
 Multiple cropping
 Organic farming
 Monitoring and control in plants
 Engine and fuels
 Land management
 Crop separation

^athese technologies also apply to plant, soil, and water

Source: Office of Technology Assessment



Adapted from: Everson, R.E., J. Putnam and C. Pray. "The Potential for Transfer of U.S. Agricultural Technology." Office of Technology Assessment, 1985

Figure 4.1. Agricultural Patents in Biotechnology by Source of Patent Owner 1980-1984

A distinction of the opportunity analysis suggested here is that it goes beyond a survey of markets by integrating the targeted emerging technology products along the path towards commercialization. In some cases, it is conceivable that this opportunity analysis would be carried out by private interests, consistent with the firm's own internal strategy. Given the broad scope of technology potentials, such as listed in Table 4.1, public support for this analysis through universities or private/public research foundations may be necessary.

Technology Development. Parallel to the assessment of market potentials, coordinated efforts are needed to assess the emerging technologies that can address market opportunities. The critical linkage in this case is a liaison between basic research, often carried out through universities, and the commercial firms most likely to develop the applications of such technology.

This objective is also concerned with continuing or expanding research efforts in new scientific areas. Within the technology development area, however, ongoing communication between basic and applied research interests must be facilitated. Research foundations, technology development centers and the Cooperative Extension Service figure prominently in this role. Applied research interests may be effective in providing or facilitating funding in basic research areas.

objective areas and associated activities are listed in Table 4.2.

Opportunity Analysis. A system is needed to simultaneously track the scientific developments and the economic potentials of new technologies. The objective of opportunity analysis for agricultural

markets is to monitor emerging market trends in order to identify those crops or products that are based in emerging technologies and exhibit economic potential. This will involve research and assessment of the markets, an activity that would likely be coordinated with ongoing IMPACT

Center analyses. Having surveyed market potentials, the more promising market opportunities would be evaluated and prioritized based on technologies and economic potentials. Lastly, business and marketing plans for priority areas would be prepared.

Table 4.2. Commercializing Science and Technology in Agriculture

1. Objective Area: Opportunity Analysis for Agricultural Markets

Activities:

- A. Assess emerging technologies
- B. Research and assessment of market trends
- C. Conduct feasibility analyses
- D. Prioritize market opportunities based on technology and economic potential
- E. Develop marketing/business plans

2. Objective Area: Technology Development

Activities:

- A. Liaison between universities and industry to prioritize promising technologies
- B. Identify needs and sources of technology research funding
- C. Technology research and development

3. Objective Area: Commercialization Process

Activities:

- A. Build university/industry alliances
- B. Develop incentives for technology adoption by private industry
- C. Establish investment and financing support
- D. Demonstration and outreach of technology needs and potentials
- E. Recruit businesses in priority technology areas

Investment in new science and technology is an appealing long-term solution to many agricultural problems. Past experience has demonstrated that both agriculture and the public receive a generous long-term return from resources committed to agricultural research. The diversity of Washington agriculture places pressure on researchers to respond to a multitude of opportunities and challenges, while research budget limitations restrict the scope of potential investigation. Because

funding is critical in the continuation of a strong program in new science and technology, formal research strategies and priorities need to be developed in support of coordinated funding efforts for all of Washington agriculture.

Commercialization Process. As indicated in both the market analysis and technology development objectives discussed above, a key to success in the commercialization process is a foundation of strong university/industry alliances. Private industry must be

convinced of the viability of new technological research and be involved in the decision-making process in its early stages. A variety of organizational structures are available to serve this purpose, including several already in place in Washington, such as the Washington Research Foundation or the Washington Technology Center, both affiliated with the state's university research efforts.

A number of incentives for technology development and adoption by the private sector have been suggested by the Committee for Economic Development. These include: 1) tax policy changes; 2) reducing regulatory uncertainties and constraints; 3) improving the effectiveness of the patent system; 4) directing federal research and development support towards basic research; and 5) increasing innovation through the market economy, with a greater reliance upon profit incentives.

Greater public involvement in the commercialization process through support of basic research and demonstration of technology potential may be warranted. At the state level, the "critical mass" offered by a research community can serve as a positive recruitment tool for businesses and firms in applied technology areas. Branch university campuses in agricultural areas may be helpful in this regard.

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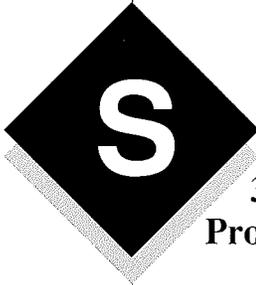
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3. Value-Added Processing

The term “value-added” refers to the value added to a good or service, primarily as a result of additional processing such as handling, manufacturing, packaging and merchandising. All agricultural products incur some degree of processing before reaching their final use. The value added varies by commodity, depending upon product form. The farm value of wheat products at the retail level—bread, for example—is only about 7 percent, meaning that 93 percent of the retail value is “added” to the raw product. The farm share of retail price for other agricultural products ranges from less than 20 percent for processed fruits and vegetables, to about 50 percent for meat and dairy products, and reaches a high of about 65 percent for eggs. These percentages indicate that significant value is added to agricultural products in processing and handling. In most cases, farmers receive only a modest share of consumer expenditures for food, averaging about 30 percent during 1986 for a representative consumer market basket of goods. Figure 5.1 illustrates the major components of an average consumer dollar expenditure for food in 1986. On average, processing activities account for the single largest component of consumer expenditures for food at 31 percent of the food dollar.

Processing activities not only add value to agricultural prod-

ucts, but also create additional jobs and income for the state’s economy. The value-added processing strategy identified by AG-2000 seeks to increase the value-added component of Washington’s agricultural products through expanded processing activities in the state. U.S. Bureau of Census data indicates that the average value added per employee in the Washington food products industry was \$49,626 in 1982, and this was 16.5 percent below the national average (Table 5.1).

The value-added strategy in AG-2000 includes: 1) the retention and strengthening of existing food processing firms in Washington; 2) the identification and attraction of new value-added food processing activity to Washington; and, 3) the development of new value-added processing technologies in support of markets for new agricultural crops and products.

Long-Term Goal

The intended results of the AG-2000 strategy in value-added processing is two-fold. The primary objective is to increase sales and, ultimately, profitability of Washington agricultural goods by focusing attention farther along the marketing chain. Referring to Figure 5.1, the objective is one of adding as much of the processing component and, where feasible, the wholesaling, transportation and retailing components to agricultural products here in Washington State, rather than losing sight of agricultural commodities once they have left the farm gate.

As a second goal, greater emphasis on value-added processing is expected to provide economic development benefits in terms of generating employment and investment opportunities within the state associated with the processing activities.

Major Opportunities

The abundance and diversity of food and agricultural products in Washington creates a potential for an even greater number of finished consumer products. Locating processing facilities nearby production points would be expected to lower procurement costs. The types of value-added processing that can occur relate directly to the commodities in question. For example, the bulk, homogeneous goods such as potatoes or dairy products may be suited to large-scale bulk processing facilities. Alternatively, the lower volume output of specialty agricultural crops, such as small fruits and berries, seed crops, or certain vegetables, may not justify or require a large processing facility. Large-scale processing of bulk commodities often relies upon cost savings obtainable through economies of size. Such operations are normally low-margin per unit. Alternatively, smaller firms may employ flexibility or adaptability that allow higher per unit margins on a lower volume, particularly for more specialized products, where differentiation of output provides a means of generating a higher operating margin. Firm size in such applications could be relatively small, employing less than ten

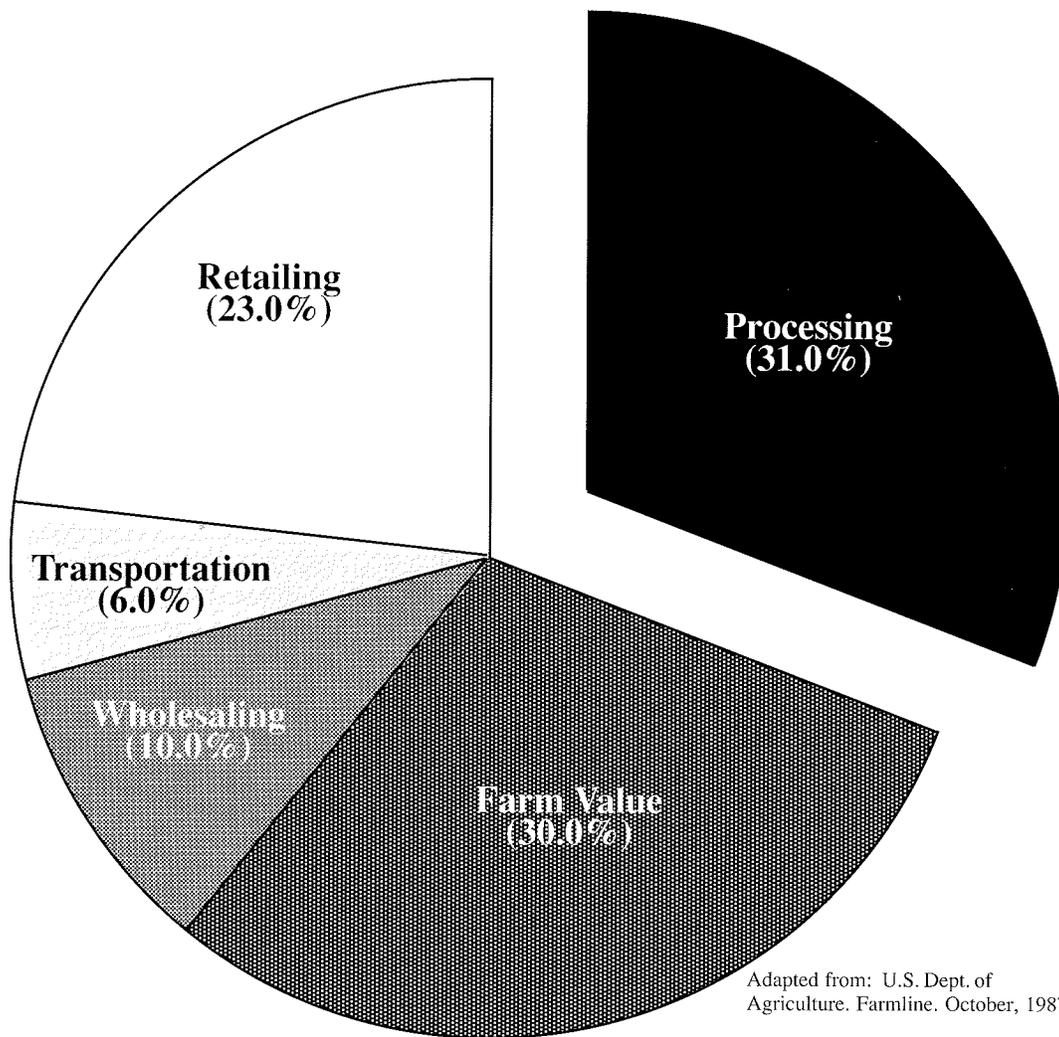


Figure 5.1. Components of the Consumer's Dollar Spent on Food

Canada. Washington's own resident consumers constitute an important market outlet for agricultural commodities as well. Economic input/output studies indicate that nearly 25 percent of Washington's total agricultural output is consumed within the state.

Meeting consumer demand within the state provides Washington agriculture with a clear cost advantage for some agricultural commodities, such as dairy products, and has provided some surprising opportunities in others, such as poultry. Based solely on production and distribution costs, the southern United States and California enjoy a competitive advantage in terms of broiler production. Poultry from these regions can be delivered into Washington at a lower price than the most efficient producers are capable of achieving here. Nonetheless, Washington broiler producers still capture a significant share of the market through the delivery of higher quality, "Washington Grown" broilers, which provides a competitive edge in the market. This production and marketing strategy has allowed for the development of a large broiler production and processing industry in Washington despite higher costs.

The potential to develop new products and new markets is perhaps the most promising opportunity in the value-added processing strategy. Orienting production and processing activities closer to consumer

workers in the case of "cottage" industries producing goods such as specialty jams, small volume wineries, or custom meat processors.

A second category of opportunities in food processing relates to processing costs in Washington. The state's electrical energy prices are among the least expensive in

the United States. Energy-intensive processing such as freezing or cooking may be done at a significantly lower cost. The relatively mild climate in Washington could serve as a distinct advantage in terms of the length of the processing season. If scheduled harvest of commodities can be extended over a longer season, better utilization of processing

equipment is possible, again resulting in lower costs.

Washington's geographical location relative to consumers is a mixed blessing depending upon the direction of shipment; however, this state does offer distinct advantages in serving the West Coast and, more importantly, foreign markets such as Asia and Western

Table 5.1. Washington and U.S. Manufacturing Productivity

SIC	Industry	Value per Employee		Percent Difference
		Washington	U.S.	
20	Food Products	\$49,626	\$59,433	-16.5
22	Textile Products	20,167	25,858	-22.0
23	Apparel	20,043	21,918	- 8.6
24	Wood Products	31,819	26,677	19.3
25	Furniture and Fixtures	34,929	29,424	18.7
26	Paper Products	61,135	55,118	10.9
27	Printing and Publishing	36,389	42,130	-13.6
28	Chemical Products	76,216	88,603	-14.0
29	Petroleum	212,414	145,571	45.9
30	Rubber and Plastic Products	42,651	39,928	6.8
31	Leather Products	28,750	23,888	20.4
32	Stone, Clay, and Glass Products	46,121	43,247	6.6
33	Primary Metals	48,739	38,978	25.0
34	Fabricated Metal Products	41,897	40,370	3.8
35	Nonelectrical Machinery	40,417	46,726	-13.5
36	Electrical Machinery	48,496	44,192	9.7
37	Transportation Equipment	42,351	53,219	-20.4
38	Instruments	54,527	53,996	1.0
39	Miscellaneous Manufacturing	31,342	36,746	-14.7
Total Manufacturing		\$43,218	\$43,161	0.1

Source: U.S. Bureau of the Census, 1982

the potential economic benefits from attracting new processing industry are not totally expended in concessions made to new firms.

Also, basic marketing considerations cannot be overlooked. Processing, as with production of the raw product, must be directed towards identifiable markets. Building a processing facility is, in itself, no guarantee that profitable markets for the output will exist.

Specific issues that have been suggested as deterrents to expansion of agricultural processing in Washington include the state's Business and Occupational (B&O) tax, labor costs, lack of appropriate financing, and intense competition within the existing food processing industry. Such challenges do not necessarily form uniform barriers, but may adversely affect specific processing activities. For example, the B&O tax is a disincentive for a new processing firm, particularly one with anticipated high-volume, low-margin operations, such as a bulk food processing operation.

Components of the Strategy

There are several interrelated features that make up the AG-2000 strategy in value-added processing, as indicated in Table 5.2. The basis for expanding processing activity must come from competitive advantages specifically related to variables in the state of Washington. This requires careful analysis of the existing and

demand both here and abroad will require different value-added processing activities than presently exist. Washington wheat growers have become intrigued with the potential to sell not just food wheat, but commercial products such as fuels and plastics that are derived from wheat. This is a significant departure from the traditional notion that value-added processing in the wheat industry consists of milling and baking. In other cases, new or alternative crops may offer processing potential, such as a crushing facility for rapeseed oil for both export and domestic use.

In such cases, agricultural processing may well be the critical linkage that brings together production and identified consumer demands. Facilitating the processing industry may require structural changes within the agricultural producing sector, including the broader use of vertical integration and grower-owned processing cooperatives as a means of adding to processing capabilities.

Major Challenges

Competing with other regions for the siting of value-added processing is a major challenge. Particularly for large firms processing bulk commodities,

the large capital investment required in buildings and equipment causes processors to look very carefully at the location of processing facilities. In addition to traditional economic considerations such as procurement, processing, and distribution costs, related considerations concerning labor laws, environmental regulations, concessional financing terms, and tax breaks weigh heavily upon a firm's decision to locate or relocate in a specific area. Attracting processing industry in this environment may require major recruitment efforts and some care is needed to ensure that

potential processing applications in the state. The analytical component then provides a basis for directed action in targeting high priority processing areas. These two objective areas are further defined by several suggested activities.

Improve the Business Environment. Accepting the premise that a competitive, market-driven agricultural economy is an overriding objective in the agricultural industry, steps taken to enhance the value-added processing business environment towards this end are appropriate. The first step in this direction is a needed assessment of the key economic variables that influence the economic performance of the agricultural processing industry in Washington State. As discussed above, questions have been raised concerning issues such as the B&O tax, labor, environmental regulations, and capital financing needs, all with specific reference to the processing industry. Careful specification of the influence of these and other performance variables is needed to guide targeted business development efforts.

Based on the analysis of the processing industry, modifications in regulations affecting this industry may be called for. Similarly, acknowledged strengths and weaknesses influencing processing activity in Washington can be tailored to attract specific value-added sectors.

Coordination with the market-

Table 5.2. Value-Added Processing Strategy

1. Objective Area: Improve the Business Environment for Agricultural Processing

Activities:

- A. Identify key variables influencing economic performance in agricultural processing industry**
- B. Evaluate state business regulations affecting agricultural processing industry; propose changes as appropriate**
- C. Develop commercialization system for processed agricultural products**
- D. Monitor performance and concerns of existing processing firms and industries**

2. Objective Area: Recruitment of Processing Firms

Activities:

- A. Analyze and identify target industries suited to Washington**
- B. Recruit target industries**
- C. Develop "professional" package to promote Washington's advantages in agricultural processing**

ing and technology commercialization strategies might be useful in assessing potential new markets and processing technologies for processed goods beyond the scope of existing activity. Unique requirements of the processing industry such as financing, compliance with environmental regulations, special labor needs, and logistical arrangements warrant coordinated planning. As in product marketing, promising agricultural processing activities might be targeted and promoted based on expectations of the greatest likelihood of success.

An important source of information concerning potential for expanded value-added processing in Washington agriculture is the existing

industry in the state. Monitoring the economic performance of value-added processing firms already doing business can provide insight as to the most promising areas for expansion of the industry, as well as providing advance warning of declines in the existing industry. Thus, AG-2000 recognizes that support and development of the existing processing industry is as important as bringing in new firms.

Recruitment of Processing Firms. The information provided in the analysis of the processing industry serves as a basis for targeting the recruitment or development of additional processing activity. The key concept in this regard is targeting specific efforts, rather than just advertising.

Recruitment or promotional "teams" might be put together to address specific situations. That is, financing, process technology, marketing, labor, and regulatory expertise can be brought together to provide a comprehensive "package" of factual promotion materials tailored to a specific firm or business prospect. Special attention will be required to ensure that the interests of local promoters does not conflict with the health and competitiveness of the overall processing industry. The use of heavy subsidization to attract processing activity can work to the detriment of efficient capital flows as well and hurt other competing firms.

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4. Building Infrastructure

Infrastructure is a general term that refers to the framework of individuals and institutions that provide the necessary supporting services to the production processes. Such supporting services in agriculture include education and research, financing, and transportation, as well as services providing basic farm inputs such as fertilizer, machinery, insurance, and farm labor. The high levels of efficiency and productivity achieved by the Washington agricultural industry would be impossible without a strong infrastructure. In many cases, however, the significance and contribution offered by these support services are not recognized until problems arise, such as the shortage of transportation equipment in the late 70's, or the vulnerability of the agricultural finance sector revealed in the mid-1980's.

AG-2000 recognizes the need for a strong infrastructure in agriculture, both to support existing industry, as well as to expand and redirect economic development efforts in the future. The means by which the infrastructure receives signals from the various components of agriculture are mixed. Some, such as farm input suppliers, respond to normal market signals, while others such as education rely primarily upon public planning decisions. AG-2000 seeks to work in those areas of the infrastructure where improved communication or signals between the infra-

structure and basic agricultural production can be enhanced or clarified, thereby improving support to agriculture.

Many sectors in the agricultural service support industries are functioning efficiently and no adjustments are warranted. This strategy has singled out those areas that appear vital to Washington agriculture over the longer term, where additional input may be necessary in order to ensure the infrastructure support envisioned for Washington agriculture in the future. Three general areas targeted for attention by AG-2000 are education, finance, and transportation. As an ongoing process, expectations placed upon the infrastructure are subject to change over time. Other areas may be added to this agenda as conditions evolve.

The fundamental economic activity in agriculture is the productive processes that create the agricultural goods that are sold to consumers. Growth and profitability in agricultural production and processing create the needs for supporting services in the infrastructure. A responsive, efficient infrastructure is necessary to support the competitiveness of the producing sectors.

Long-Term Goals

The basic objective in the AG-2000 strategy concerning the infrastructure is to ensure the long-term viability of the infrastructure serving agriculture. This objective has varying implications in application to particular supporting services

but, in the context of the long-term strategy, a key attribute is the ability to respond quickly and efficiently to emerging economic and cultural demands. Recognizing that such services largely respond to economic signals, market incentives such as input prices, sales potential or profitability must be relied upon to a great extent. Nonetheless, public involvement may be required to the extent that emergencies or opportunities that develop unexpectedly in Washington agriculture need to be dealt with as efficiently as possible. Advance planning is an important means of achieving this goal.

Major Opportunities

The nature of the opportunities in building the basic infrastructure in agriculture relate to the specific areas cited previously: education, finance, and to a lesser extent, transportation. In each case, the opportunity relates to a longer term vision of the Washington agricultural industry, and how actions designed to strengthen the infrastructure will allow the industry to better cope with future developments.

In any long-term planning effort, basic education plays an important role in providing the skills and attitudes that will be necessary to survive and prosper in the future. Education has long been the backbone of public support to Washington agriculture, ranging from the youth development experiences of 4-H, to coursework at the state's colleges and universities, to adult education offered by

the Cooperative Extension Service. As the structure of Washington agriculture continues to evolve, forward-looking changes in the educational infrastructure will ensure that the attitudes, skills, and training appropriate for agriculture by the year 2000 are available. In support of the marketing, technology, and value-added components of the AG-2000 strategy, complementary educational programs ranging from language and cultural education in support of international trade to technological developments in genetic engineering should be anticipated. Moreover, the "critical mass" necessary to support Washington as a world class leader in areas such as international trade, finance, technology, and agriculture will be enhanced to the extent a knowledgeable, trained work force is available to support these industries.

In the area of finance, the greatest opportunity appears to lie in providing an efficient market for start-up and expansion capital needs. As private sector commercial enterprises in agriculture respond to opportunities in international trade, new technology, and value-added processing, traditional debt and equity financing concepts may prove outdated. It is important to maintain the efficiency and competitiveness in capital markets both in agriculture and other sectors, such that the distortions created by excessive subsidization or concessionary financing terms are minimized. Improving the access of those seeking agricul-

tural financing to the national and international capital markets is a priority in this regard. Capital investment by foreign lenders is unfamiliar in much of traditional U.S. agriculture, but this "reverse" investment may offer an important source of financing in the future.

Because Washington's potential for serving Asian markets relies heavily upon an efficient transportation system, careful monitoring and long-term planning in this sector are vital. Excess capacity of transportation equipment serving some commodity groups has created low-cost shipping arrangements that may not persist over the long term. The transportation service markets adjust quickly to the supply and demand for their service and rate changes can create dramatic impacts on the state's competitiveness, as illustrated by rail car shortages of the late 1970's.

In planning for future transportation service needs, particular attention is needed on the side effects, or "externalities," that are imposed on third party users. For example, the increased truck traffic on rural roads and bridges brought about by adjustments in grain rail shipment during the past five years is a cause for concern in many rural Washington areas. Similarly, railroad abandonments, port capacity, and transportation deregulation in general are issues that will influence the transportation infrastructure and therefore represent key opportunities for strategic planning.

Major Challenges

A well-functioning agricultural infrastructure as discussed above is a necessary prerequisite in achieving the long-term AG-2000 goals. In many regards, the provision of this infrastructure relies upon the same market-driven economic incentives necessary to propel the commercial production and processing sectors in agriculture. When the agricultural economy turns down cyclically, such as in the 1982-86 period, the associated infrastructure is often eroded, intensifying the adverse impact on agriculture. The challenge in this case is maintaining the market orientation of the agricultural economy, while providing necessary public support to ensure the long-term viability of the infrastructure. Serious reductions in support to higher education, including agricultural research and teaching during the past five years, illustrate this paradox. Ensuring longer term support to the agricultural infrastructure and providing some insulation from the short-term variability in the agricultural economy has proven difficult.

The supply and demand for agricultural labor in Washington creates a special challenge to the state. An efficient, timely farm labor supply is an essential input in many agricultural operations, and recent changes in federal law will affect labor availability in the future. The human element represented by labor raises important issues over equitable wage rates, working conditions, and social service. Traditional patterns of

labor availability, skill requirements, and community responsibility are changing, leaving both workers and agricultural firms exposed to uncertain futures.

In addition, the adjustments in rural communities that result from changes in the commercial agricultural economy have weighed heavily upon Washington agriculture in the past few years. Although long-term adjustments in the structure of agriculture may be inevitable, the short-term dislocation of individuals and economic activity has been the cause for financial and emotional stress in rural communities. Such adjustments are a major challenge in responding to the evolution of both agricultural infrastructure as well as the commercial production activities.

Components of the Strategy

The three focal areas identified in the AG-2000 strategic plan concerning basic infrastructure in agriculture cover education, financing, and basic transportation (Table 6.1). In each case, the objective is to ensure the long-term provision of necessary service support to commercial agricultural activities. These three areas are in direct support of the marketing, technology commercialization, and value-added processing components of the overall AG-2000 strategic plan.

High Quality Education Base.

To some extent, the emphasis in education is a continuation of existing support, but with a

recognition of emerging changes in agriculture. Declining enrollment in agricultural disciplines at colleges and universities may be symptomatic of structural changes in the agricultural industry, but the need for top quality students is a necessity for the long-term progressiveness of the industry. Actively publicizing and recruiting incoming students through scholarship and grant programs will be necessary to attract individuals into key agricultural disciplines. In addition, stronger linkages between higher education and the agricultural economy through internships and leadership development programs is encouraged. Specific curricula focusing on agricultural business, marketing, international trade, and finance is similarly endorsed. The use of branch campuses of colleges and universities to bring higher education closer to the agricultural business community is seen as a step in the right direction.

Recognizing that education and training are critical elements of the human resource infrastructure supporting agriculture, adequate training opportunities for employers and employees should be provided covering such topics as safety, pesticide use, and industrial insurance coverage. Employers should also provide adequate training for new and continuing employees to ensure a highly skilled work force.

Adequate Financing Resources. For much of the traditional financing needs in agriculture, existing agricultural

lending arrangements appear adequate, with interest rates and lending requirements consistent with economic climate. The major thrust of the objective area in financing is the provision of debt and equity financing to serve the needs of expansion and venture capital demands. On one hand, this will require increasing the efficiency of the market in providing access to venture capital sources outside of traditional agricultural capital markets. Secondly, the state of Washington's role in enhancing or providing financing needs should be carefully evaluated. While not necessarily recommended, the state's ability to float bonds, guarantee and make loans, or promote alter-

native financial arrangements should be evaluated in light of financing needs, especially in the area of venture capital.

Again, some care is warranted that public involvement in financial markets not distort the proper flow of investment funds in the economy. Rather, the emphasis is placed on developing efficient means of drawing investment into the state's agricultural economy. New or innovative arrangements such as foreign investment and Business and Industrial Development Companies (BIDCO's) should be explored in this regard.

Basic Transportation Network. With the move towards inter-

state deregulation of transportation at the federal level in the 1980's, the private sector has played a larger role in the determination of rates, routes, and service. Technological innovations, such as the increasing reliance upon multi-car grain transportation through subterminal elevators has resulted in increased system efficiency. In planning for the longer term future of Washington agriculture, particular attention is directed towards the core transportation system and its projected needs. Issues such as intermodal capabilities, international movement, and evolving technological developments in agricultural transportation need to be integrated into both private and public decisions influencing agricultural transportation.

Table 6.1. Building Basic Infrastructure in Agriculture

1. Objective Area: Assure High Quality Education Base

Activities:

- A. Promote/support progressive educational curricula and training in agricultural sciences at all levels**
- B. Publicize ongoing scholarship/grant programs at colleges and universities to attract top students into key agricultural disciplines**
- C. Establish/support leadership development programs in agriculture**
- D. Encourage/provide training opportunities for employers and employees on employment-related topics**

2. Objective Area: Assure Adequate Financing Resources

Activities:

- A. Develop data base on venture capital sources for agriculture**
- B. Evaluate the state's ability to float bonds, guarantee and make loans in agriculture, especially venture capital**

3. Objective Area: Provide Basic Transportation Network

Activities:

- A. Map/analyze core transportation system and projected needs**

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Strategy Discussion Papers

5. Natural Resource Management

Both in the immediate and the long-term outlook, no area of agriculture appears clouded with such controversy and uncertainty as does natural resource use and conservation. Natural resources such as land, air, and water are frequently viewed as multiple-interest, multiple-use goods in our economy. No single entity has complete ownership. Multiple-use, given greater social and economic demands for these resources, has led to numerous conflicts. Increasingly, natural resource use conflicts are finding their way into the judicial system and government regulations.

The AG-2000 strategy concerning natural resource management primarily is directed at improving the climate and mechanism for decisions affecting natural resource use and conservation in Washington agriculture. Initially, the focus of this effort is on the decision-making process affecting natural resource use in agriculture, but ultimately extends to the practices and efficient use of the natural resource base itself.

There are many urgent natural resource use issues facing Washington agriculture but simple prescriptions are unlikely to solve these problems. It is important, however, for agriculture to provide a format and the leadership for the

allocation decisions that ultimately will be made, rather than respond defensively to areas of controversy. The AG-2000 strategy proposes a multi-interest coalition of natural resource users, including agriculture. Modeled after the Timber-Fish-Wildlife coalition formed to deal with forestry-related natural resource issues, this process appears to be a necessary first step to establishing equitable long-term agreements on natural resource use in Washington agriculture.

Long-Term Goal

The overall objective of the AG-2000 strategy in natural resource management is to achieve an efficient use of the natural resource base by the Washington agricultural industry. This agenda must ensure the long-term productivity and income-generating potential of the state's natural resources, consistent with established values and proper conservation practices. This objective also recognizes that Washington's inherent natural resource base is the foundation of the productivity and income-generating potential of agriculture. Thus, prudent use of Washington's water, soil, and other natural resources can be consistent with both conservation and economic development objectives.

Major Opportunities

The endowment of natural resources in Washington state is a major contributing factor in the underlying productivity and competitiveness of the state's agriculture. The natural

resource endowment is an integral part of the productivity that has propelled Washington farmers to produce more potatoes per acre, more milk per cow, and more dryland wheat per acre than farmers in any other state. In many cases, intensive development of the natural resource base has been necessary to generate this productivity, such as irrigation development in the Columbia Basin. In other situations, managerial skills and cultural practices utilize existing natural resources, such as in the dryland grain production of southeastern Washington. Past experience has demonstrated that the resources can be misused and managerial practices have adjusted to provide appropriate conservation, such as the adoption of conservation tillage, more efficient irrigation, and controlled use of chemicals.

Washington agriculture can undoubtedly extract even greater productivity from its natural resource base, given economic incentives to pursue further development. That is, increased domestic and foreign demand for agricultural products can be expected to produce even more intensive use of Washington's natural resources, if and when market signals call these resources into production. Prudent use of Washington's natural resources is essential to guard against unwise practices, unreversible exploitation, and unreversible environmental damage. Whether expanding or contracting natural resource

use, future decisions are likely to involve input from both the private market as well as public sector. It is important that agriculture take a positive leadership role in initiating natural resource use policy, rather than just debating regulatory actions that affect this industry. Washington agriculture has demonstrated the ability to increase efficiency in natural resource use in the past and should strive to maintain this edge in the future. The two-fold opportunity thus becomes one of providing and adapting to efficiencies in natural resource use, while maintaining the initiative for a pro-active role in the public and private market decision-making process.

Major Challenges

As suggested above, the increasing role of public involvement in natural resource use decisions removes some of the discretion for the private agricultural sector in determining resource management. Particularly for multiple-use resources such as water and land, nonagricultural users have found legislation and regulation to be powerful tools for imposing their judgments on optimal natural resource use. These judgments have been aggravated by the increasing demands placed on natural resources, while the resource base has been declining. Mechanisms to facilitate efficient market transfer of natural resource use patterns have been slow in developing, and regulations placed on resource use have

increasingly narrowed the rights of agricultural users, as exemplified in environmental regulations on waste water disposal, chemical use, water rights, and development of aquaculture.

The major challenges, therefore, relate to declining supplies or availability of inherent natural resources, compounded by increasing demands by both agricultural and nonagricultural users. Market forces exert powerful positive and negative influences on the level of resource use. Due to the multiple-use characteristics of these natural resources, however, allocation decisions have been relegated to legislative or similar regulatory processes, which may or may not accurately reflect normal market signals. Finding acceptable compromises that are still consistent with economic incentives has proven to be very difficult in the allocation of natural resources.

Components of the Strategy

The primary components of the AG-2000 strategy in natural resource management are listed in Table 7.1. The three objectives are in recognition of: 1) the need for an equitable decision-making process regarding natural resource use and the environment; 2) the importance of developing managerial and regulatory processes to increase efficiency in natural resource use; and 3) the need to provide ongoing education for both the public and agricultural industry about agriculture and the environment.

Table 7.1. Natural Resource Management

1. Objective Area: Multi-Interest Coalitions on Natural Resource Use and the Environment

Activities:

- A. Form statewide coalitions representing concerned interests, including agriculture, on natural resource use and conservation**
- B. Provide centralized identification, organization, discussion and action on natural resource management issues**
- C. Provide a forum for proactive agricultural industry initiative on natural resource management**

2. Objective Area: Increased Efficiency in Natural Resource Use

Activities:

- A. Develop and implement integrated resource management systems in agriculture**
- B. Explore greater market transferability of resource property rights**
- C. Reform/simplify jurisdiction over natural resource management**

3. Objective Area: Public and Industry Education Concerning Agriculture and the Environment

Activities:

- A. Provide unbiased forum for general and vocational understanding of natural resource use in agriculture**

Multi-Interest Coalitions on Natural Resource Use and the Environment. As a means of addressing multiple-user concerns regarding natural resources and agriculture, a process or institution is needed to allow the various parties a means of expressing views, reconciling differences, and achieving acceptable compromises in resource use decisions. Such coalitions, representing concerned interests including agriculture, on natural resource use and conservation provide two important advantages for

the agricultural industry. First, such an organization would provide centralized identification, organization, discussion, and action on a natural resource management issue involving agriculture. Secondly, although groups other than agricultural interests would be expected to participate, a coalition would provide a forum for proactive initiatives by the agricultural industry in setting natural resource management use guidelines.

Agriculture has been placed in defensive positions regarding many resource use issues, and this has weakened the industry's efforts to provide leadership in negotiating natural resource use guidelines. A multi-interest coalition might not endorse all proposals offered by the agricultural industry, but the caucus provides a mediated process for examining agricultural initiatives. Recognizing that in agriculture there are also different viewpoints on natural resource use, the structure and representation in a multi-interest coalition also provides a vehicle for reconciling conflicts regarding natural resources within agriculture. Most importantly, agriculture will be afforded the opportunity to take the initiative in setting the agenda for natural resource management affecting this industry.

Increasing the Efficiency in Natural Resource Use. In order to establish credibility and leadership in policy decisions, the Washington agricultural industry must simultaneously recognize and remedy the problematic areas in natural resource use. Possible activities in this context include the development and use of integrated resource use management systems in agriculture, such as the conservation tillage practices developed in the STEEP project (Solutions to Economic and Environmental Problems) or irrigation management practices. The basic concept in integrated resource

management systems is to place natural resource decisions in the context of the entire production, conservation, and economic process, rather than viewing them as isolated decisions.

Another area of potential efficiency gains lies in exploring market transferability of resource property rights. Changes in legislation or regulations may be necessary to ensure equitable functioning of natural resource property rights, but this concept provides a familiar mechanism—the marketplace—for reconciling basic supply and demand issues.

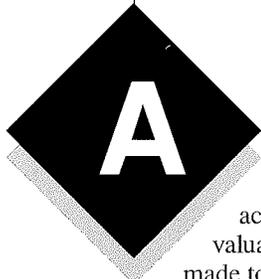
Because natural resource management is strongly influenced by regulatory processes, efforts are needed to reform and, where feasible, simplify the jurisdiction over natural resource management decisions. Overlapping jurisdiction covering Washington's surface water by different branches of government can create misunderstandings and impede efficient allocation of the resource base.

Educational Efforts. Recognizing that natural resource use and conservation will likely occupy a prominent position in the public eye, focused educational efforts about agriculture and the environment appear necessary for both the general public and specific agricultural industry groups. At times, both urban and agricultural interests have become polarized over issues concerning natural resource use, and this prevents reconciliation or

compromises on the difficult, often complex, problems that arise. The agricultural industry needs to take the initiative in developing realistic input into public perceptions about this industry. Similarly, Washington agricultural interests must remain informed on the sensitive and often technical issues involved in resource use, such as licensing pesticide applicators, or understanding the aesthetic and recreational values held by nonagricultural users of the state's natural resources.

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Appendix

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