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Wild Rice Market Shows Vigorous Growth

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Wild rice is native to many lakes and slow-moving streams of northern Minnesota and southern Canada. It was a staple foodstuff in the diets of the native Indians in these areas and was one of the first items traded by the Indians to the French in the New World. Its image as a gourmet food can be traced back to this early period.

Commercial production of cultivated wild rice in Minnesota, however, dates back only to the mid-1960s. Production has expanded rapidly in Minnesota as has production in California where wild rice was introduced eight years ago. Nationwide, the wild rice industry has undergone a dramatic transformation in the last 15 years. Today, wild rice shows substantial promise as a new agricultural crop.

Since 1969, the Minnesota Legislature has provided special funding for wild rice research by the University of Minnesota Agricultural Experiment Station. This research has generated significant advances in wild rice cultivation, including improved varieties and production practices. Yields already have increased by fivefold over early cultivation experiments.¹ But, economic information on the wild rice industry has been sketchy and incomplete.

Three years ago the University of Minnesota Department of Agricultural and Applied Economics began a research study on the economics of marketing wild rice. The first phase of this study was completed with the publication of a research report which provided

a historical and modern overview of the economics of wild rice production, prices, and marketing.² The objectives of this article are to highlight and update the results and economic data contained in that publication, and to report some results of research currently underway on the consumer demand for wild rice.

Trends in the expansion of consumer demand for wild rice are of crucial importance to the industry. The wild rice industry should make an effort to gear future production expansion to the market's capacity to absorb wild rice at prices that provide a satisfactory return to growers. Prices of such a spe-

cialty crop can tumble precipitously if production increases more rapidly than consumer demand.

THE SUPPLY OF WILD RICE

The supply of wild rice for the United States market comes from the harvest of Minnesota and Canadian lakes and the production of cultivated wild rice on farms in Minnesota and California. The trends in production from 1968 to 1984 for each of these sources of supply are shown in Figure 1. The economics of supply and prospects for future expansion are briefly discussed below.

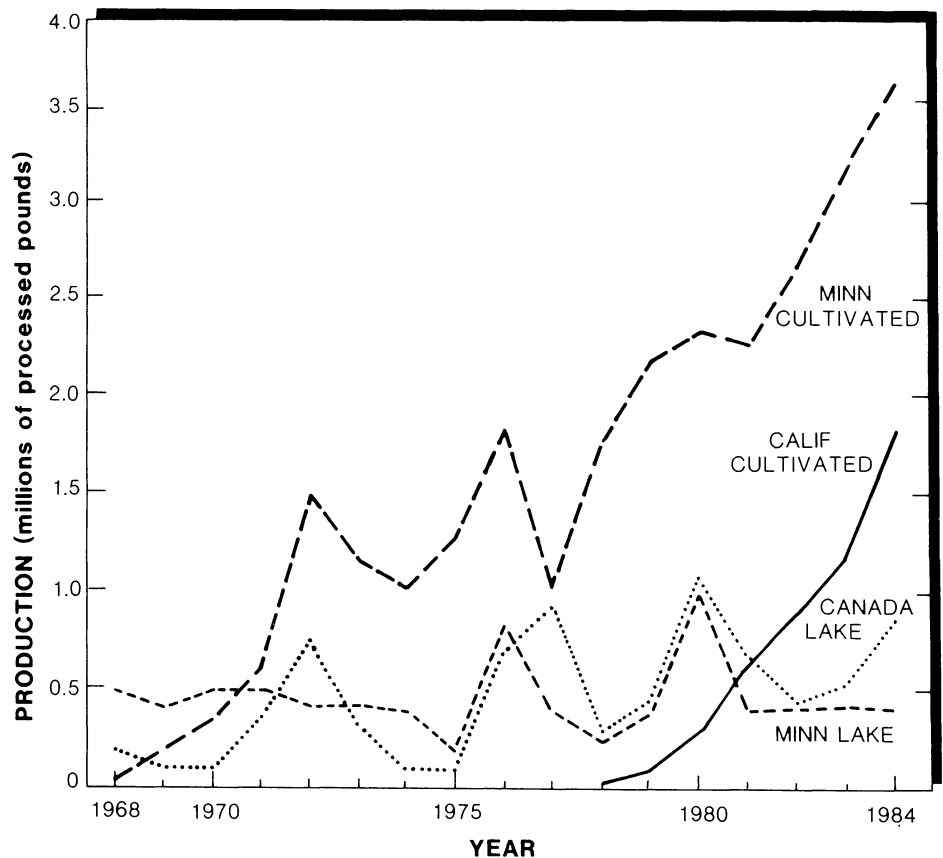


Figure 1. Wild Rice Production, 1968-1984.

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¹Oelke, Ervin A., ed. *Wild Rice Production Practices in Minnesota*, University of Minnesota Agricultural Extension Service, AG-BU-0546.

²Winchell, Elizabeth H., and Dahl, Reynold P. *Wild Rice Production, Prices and Marketing*, University of Minnesota Agricultural Experiment Station, Miscellaneous Publication 29-1984.



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Lake Wild Rice

Wild rice continues to grow, as it has for thousands of years, along the edges of lakes in northern Minnesota, southern Ontario, and Manitoba. However, production levels vary widely from year to year. Generally, an excellent crop may be expected one year out of four, accompanied by one poor crop and two fair crops. These production variations are due to excessive fluctuations in water levels at critical points in plant development, to wind damage near harvest, and to other factors.

Production data for lake wild rice in both Minnesota and Canada are often estimates subject to error. The trend in production in Minnesota is probably steady to slightly declining. Harvesting on Minnesota Indian reservations and public lakes is restricted to the traditional canoe-and-flail method. Little developmental efforts have occurred on either Indian reservations or state-owned lakes because present policies and practices make no provision for individual production rights and, hence, do not provide incentives to increase production. As the production of cultivated wild rice has increased in Minnesota, the share of lake wild rice in the total supply has declined. In 1984, Minnesota produced 450,000 processed pounds of lake wild rice and 3.6 million processed pounds of cultivated wild rice (Figure 1).

Like Minnesota, the production of lake wild rice in the Canadian provinces of Manitoba and Ontario has not shown a discernible upward trend. Uncertainty over provincial government wild rice policies has, to date, restrained expansion of the industry. Production in Saskatchewan, however, increased from 60,000 processed pounds in 1979

to 480,000 pounds in 1984. Saskatchewan, which had no indigenous wild rice, is engaged in an extensive lake seeding program. The provincial government has encouraged the planting of wild rice as a source of income for the native Cree Indians. The keys to the impressive success of this program are provisions for individual production rights on public-owned lakes and more efficient harvesting methods than the traditional canoe-and-flail. Production of lake wild rice in Saskatchewan will probably continue to expand. The supply of Canadian wild rice is important because about 80 percent of the Canadian production is marketed in the United States.

Cultivated Wild Rice

Production of cultivated wild rice in north central Minnesota increased from only 36,000 processed pounds in 1968 to 3.6 million pounds in 1984 (Figure 1). Here previously unused land, often peat bog, has been developed into paddies that can be flooded in the spring and drained in the fall before harvest. Cultivated wild rice production is highly capital intensive due to the cost of land development and the specially designed equipment required.

Production is centered around the Minnesota communities of Aitkin, Clearbrook, Grand Rapids, and Waskish (Figure 2). Acres of productive paddies totaled about 25,000 acres in 1982, not including dikes and ditches. Yields varied from 70 to 200 processed pounds per acre with the median yield about 150 pounds. Currently, median yields are approaching 200 pounds per acre.

There were 58 wild rice farms in Minnesota in 1982 with a median size of 291 acres of paddies. However, the

larger farms contribute the bulk of the state's production. Farms in excess of 291 acres produce over 80 percent of the cultivated wild rice in Minnesota.

Wild rice farms are, for the most part, family farms. Individuals or extended families operated 69 percent of the farms and produced nearly 60 percent of Minnesota's cultivated wild rice crop in 1982. Unrelated owners, commonly neighbors, operated 22 percent of the farms while only 9 percent of the farms have absentee owners with hired operators.

Production expansion of cultivated wild rice in Minnesota will be influenced by wild rice prices and the availability of suitable land and water. In 1982, Minnesota growers reported owning or renting 15,611 acres of land suitable for wild rice development. Most of this land, 10,603 acres, is in the Waskish area.

The production of cultivated wild rice in California began in 1977 and has expanded at a rapid rate reaching 1.8 million processed pounds in 1984. California's wild rice production is divided among three distinct regions each with different climatic conditions: the Sacramento Valley, Lake and Mendocino counties, and Shasta and Lassen counties.

In the Sacramento Valley, which has the largest production of the three regions, rice farmers have shifted some of their acres to wild rice. Yields per acre are almost twice those obtained by Minnesota growers. Wild rice is an attractive alternative crop for rice farmers since they are able to use their existing



Figure 2. Minnesota Centers of Cultivated Wild Rice Production.

rice land and equipment with little additional investment.

Although wild rice and rice are not closely related botanically, the production technology is transferable. Expansion in wild rice production in the Sacramento Valley will largely depend on the price relationship between wild rice and rice. If wild rice prices are favorable relative to rice prices, wild rice production will probably expand. Current rice prices are near an all-time low, so the interest in growing wild rice should be stimulated.

In Lake and Mendocino counties, wild rice production is located along the marshy fringes of lakes. Since much of the suitable land has already been brought into production, further expansion will be minimal.

In the high Sierra Nevada mountain counties of Shasta and Lassen, wild rice is grown along the banks of rivers on what previously was wiregrass pasture. Ranchers here have found wild rice an attractive alternative revenue source because of unfavorable beef prices. If wild rice prices are favorable, expanded production is likely.

Most California growers contract with a processor for production and sale of wild rice before planting. This may inhibit production expansion because

Table 1. Wild Rice Production and Wholesale Prices, 1968-1984.

Year	Total Production ¹ (million processed pounds)	Wholesale Prices ² (\$ per processed pound)
1968	.69	3.27
1969	.62	2.66
1970	.94	2.88
1971	1.43	2.71
1972	2.65	2.34
1973	1.92	2.11
1974	1.50	2.37
1975	1.55	2.51
1976	3.39	2.68
1977	2.39	4.25
1978	2.29	5.15
1979	2.96	5.01
1980	4.67	4.47
1981	3.91	3.79
1982	4.39	3.40
1983	5.27	3.35
1984	6.69	3.30

¹Estimated total wild rice production, United States and Canada using 40 percent yield rate of processed wild rice from unprocessed wild rice.

²Obtained from large volume food manufacturers.

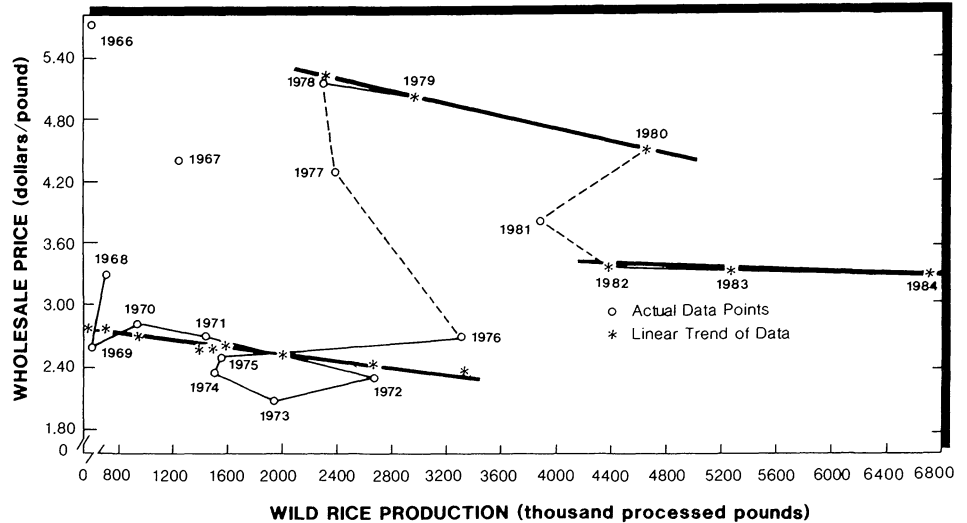


Figure 3. Wild Rice Demand Expansion, 1968-1984.

processors will probably gear such contracting to the growth in the market for wild rice.

MARKETS, PRICES AND CONSUMER DEMAND

Production and Demand Expand

When only lake wild rice was produced, prices varied widely from year to year in response to changes in supply. Instability in both prices and supply discouraged major food processing firms from introducing products containing wild rice. These uncertainties created too many unknowns to justify product development and promotion expenses.

To overcome these problems, in 1965 Uncle Ben's contracted for some of the first cultivated wild rice acreage. The continuing success of paddy cultivation has significantly reduced production and price variability. This stability has created conditions favorable for the industry to promote wild rice products.

Total wild rice production in the United States and Canada from 1968 to 1984 is shown in Table 1. While production oscillated in the early years, it has consistently and substantially expanded since 1981, reaching 6.69 million processed pounds in 1984. Most, if not all, production growth is attributable to cultivated wild rice.

The interrelationship between wild rice production, prices, and demand expansion is illustrated in Figure 3, a graphic representation of Table 1 data. Three distinguishable periods are identified. Between 1968 and 1976, wild rice supply was limited and erratic due to variations in wild rice lake and early

paddy harvests. Prices fell slightly as the supply of cultivated wild rice expanded fourfold.

An ill-fated attempt by a marketing cooperative to control supply and raise the level of prices resulted in the second period covering the years 1978 to 1980. The withholding of large stocks raised prices to levels of a decade before. However, the price increase was short-lived because it induced an increase in production. Expansion in Minnesota was modest as producers understood the reasons for this price increase. But in California, wild rice took a firm hold with production doubling annually through 1981.

The third period began after high inventory storage costs forced the sale of stocks, and prices returned to market-determined levels. Wild rice production increased 26 percent per year between 1982 and 1984. The market has been able to absorb these large production increases of nearly 1.2 million pounds per year with only a small downward adjustment in wholesale prices.³ This indicates that the consumer demand for wild rice has expanded at a vigorous rate of approximately 52 percent over the last two years.

What has accounted for the rapid growth in the wild rice market? Some answers to this question emerge from a survey of the market outlets for wild rice.

Sales by Market Outlet

The division of the wild rice supply

³Reports from the wild rice industry indicate that inventories have not risen during this period, or may even have a declining trend.

among the various outlets is shown in Figure 4 for what may be a typical year. In 1982, wild rice sales by processors including United Wild Rice, Minnesota Rice Growers Cooperative, and independent growers were estimated to total 3.8 million processed pounds. Food manufacturers accounted for 2.6 million pounds, or nearly two-thirds of total sales. These are mostly firms like Uncle Ben's that prepare, package, and market blends of wild rice and long grain rice. The remaining one-third of total wild rice sales were divided among grocers, restaurants, wholesalers, and other market outlets.

The Wild Rice Blend Market

Uncle Ben's introduced a package blend of wild rice, long grain rice, and herbs in 1961. It was widely accepted by consumers and was a significant factor in expanding the market demand for wild rice. The success of this product encouraged other companies to introduce their own wild rice-rice blends. These included Golden Grain (Rice-a-Roni), General Foods (Minute Rice), and Green Giant. Although blends typically contain only about 10 to 15 percent wild rice by weight, their increased sales have made them the dominant factor in the wild rice market. If blends had not been introduced, the cultivated wild rice industry may not have developed.

The variety of blends now sold in the market has expanded beyond those containing rice. Food manufacturers also market different blend products, such as soup and sidedish mixes, containing wild rice and a variety of vegetables. Convenience foods, such as dehydrated mixes and frozen entrees containing wild rice, have also been developed. The market demand for wild rice blends has expanded by about 15 percent per year since their introduction. This rate may be growing, as previously described, as consumers receive greater exposure to wild rice. One industry source estimates that the wild rice blend market may account for 80 percent of total wild rice sales.

The only exposure many consumers have had to wild rice is as a blend with other ingredients. According to industry estimates, consumer awareness of wild rice increased from 8 percent when blends were first introduced to 30 percent in recent years.

Food manufacturers usually prefer cultivated wild rice over lake wild rice. Traditionally, the long, dark kernels typical of lake rice were highly prized, but proved unsuitable for blending.

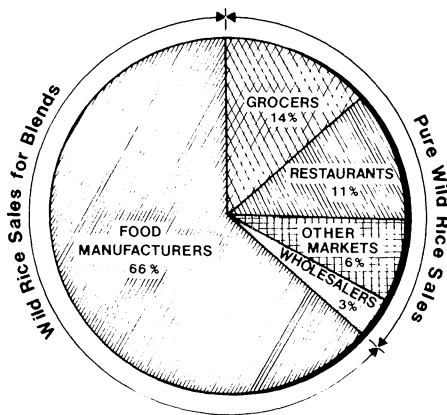


Figure 4. Wild Rice Sales by Market Outlet, 1982 Crop Year.

Cooking time is substantially greater for this rice, and, since there are fewer kernels per pound, mixes of longer grain rice appear more sparse than ones of shorter grains. Therefore, blend producers prefer shorter grain wild rice produced on paddies. The dominance of the blend segment of the market has reduced the premium once commanded by longer-grain, lake wild rice.

The Pure Wild Rice Market

Prior to the development of wild rice blends, pure wild rice was sold exclusively as a gourmet product. Production instability, inventory speculation, and associated high prices helped to support this image. Most consumers were residents of the wild rice producing areas. Concentrations of consumption were centered in Minnesota with as much as 75 percent of wild rice sales, and in the Twin Cities where 50 percent of these sales were made.

Today, the dominance of the blend market is evidenced by the fact that only about one-third of wild rice sales are in the pure form (Figure 4). Even a large portion of these sales eventually reach the consumer in the form of blends prepared by restaurants and other users. Long grain wild rice continues to be the preferred size for the pure market sector. However, some buyers prefer to use shorter or broken kernels—usually available at a discount—for soups and stuffings.

Consumer purchases of pure wild rice are markedly higher in Minnesota than elsewhere due to the greater familiarity and lower prices. Minnesota residents also buy a substantial amount of pure wild rice for shipment out-of-state as gifts and for resale.

Though growth in the pure wild rice

market can be directly tied to the nationwide advertising of blends by Uncle Ben's and others, the market also engages in its own campaigns to expand demand. The major participant in this program of pure wild rice promotion is the Minnesota Paddy Wild Rice Research and Promotion Council based at Grand Rapids. Promotion funding is based on a checkoff system from growers through their processors.

Since being established in 1969, the council has been actively promoting wild rice worldwide by providing cooking information and recipes and by participating in trade fairs. An annual promotional event is the food editors tour where nationally known writers for food publications are invited to tour grower and processing operations and to sample gourmet meals featuring wild rice. The lobbying of the council prompted the Minnesota Legislature to designate wild rice as "Minnesota's Official State Grain." Promotions labeling wild rice as the "Caviar of Grains" have led to a recent inclusion of wild rice into the menus of formal White House dinners. And, members of the council led a trade mission to Japan in 1982, helping to lift restrictions for importing wild rice and providing the Japanese with their first exposure to its varied uses.

Why haven't higher percentage wild rice blends been introduced by food manufacturers? Consumer preference research indicates that there is a market for blends of perhaps 40 percent, but such products have not been introduced. Furthermore, none of the major food companies offers a pure wild rice product. However, if supply stability and expansion continues, this may encourage the development of these products.

MARKETING WILD RICE

Processing

Wild rice from the lakes and cultivated paddies requires processing before it is sold for consumption. One hundred pounds of unprocessed (green) wild rice typically yield 40 pounds of processed grain. Processing involves two operations.

First, the wild rice is laid in long windrows to cure. The curing process serves the dual purpose of loosening the hull on the grain and storing the wild rice until processing capacity becomes available. Care must be taken in this operation because wild rice is susceptible to losses in dry matter if the curing pro-

cess is prolonged. Also, the wild rice is subject to mold, insect, and animal contamination if not carefully monitored.

The second stage of processing is parching. The wild rice is heated to reduce the moisture content from about 40 percent to 7 percent. During the intense heat of parching, contamination introduced during harvesting or curing is largely eliminated. After the hulls are separated from the parched grain, the wild rice is cleaned, sized, and packaged.

In 1982, Minnesota had 22 wild rice processing plants ranging from large operations to small plants in the owner's backyard. California had two processing plants, one of which is operated by a large Minnesota processor with plants in both Minnesota and California.

Processors play an important role in marketing wild rice. They purchase unprocessed Minnesota and Canadian lake wild rice and sell the processed grain to food manufacturers, retailers, and other buyers. Processors also purchase and market cultivated wild rice and/or process wild rice for growers on a custom basis. California processors, unlike those in Minnesota, purchase wild rice solely on contract. Contracts are generally negotiated before spring planting and, in some cases, are forward priced. In other cases, a minimum price is stipulated and upward adjustments are made if warranted by market prices at harvest.

Marketing Cooperatives

Much of Minnesota's cultivated wild rice is marketed through two wild rice cooperatives. These cooperatives, United Wild Rice and Minnesota Rice Growers (MRG), together have 20 Minnesota farm members and marketed an estimated 62 percent of Minnesota's cultivated production in 1982.

MRG, the smaller of the two cooperatives, has seven members and restricts its activities to the pooling and sale of members' wild rice. To date, it has sold mainly to one large food manufacturer. Since MRG owns no facilities, it arranges for custom processing, and members perform most of the managerial and sales duties.

United, in contrast, takes an active role in marketing and product development. It has invested in a processing plant and an instantizing plant that are among the industry's most modern. The cooperative also supports a manager and sales staff. This represents a substantial investment per member, and the

members have reinvested earnings to fund their cooperative's operation and development.

Marketing by Independent Growers

Two-thirds of all Minnesota wild rice farms are not affiliated with a cooperative, and the farmers must do their own marketing. Together they produce nearly 40 percent of Minnesota's cultivated wild rice.

About half of all independent growers sell exclusively through their processor. The rest are either integrated grower-processors or growers who sell their wild rice through a variety of market outlets.

The terms of sale between independent growers and processors vary substantially. Some fix the price at harvest; others offer a guaranteed base price plus a sliding premium if prices rise above specified levels; still others delay pricing up to seven months after delivery. Contracts establishing prices prior to harvest are rarely available to independent growers.

PRICE DISCOVERY

Wild rice prices are discovered through the interaction of buyers and sellers in the marketing system. Prices are established in a two-tier process. In the early spring large food manufacturers, such as Uncle Ben's, negotiate prepriced contracts with large sellers, locking in prices for much of the annual production. Access to these prepriced contracts is an important advantage to growers who are members of marketing cooperatives.

The remaining wild rice, the exact quantity of which is unknown until after the harvest, is priced after the contracts are fulfilled. Because many contracts are filled in the months following harvest rather than at harvest, the supply and demand situation for the residual wild rice may not clarify until six months after harvest. The absence of reliable price and quantity information tends to extend this period of uncertainty. Many independent growers of cultivated wild rice are forced to sell in the residual market and therefore must wait for the residual price to be determined.

BETTER MARKET INFORMATION NEEDED

The efficiency of price discovery and resource allocation in the wild rice industry could be improved with better market information. Organized eco-

nomics information on prices, production, stocks, and marketing of wild rice is virtually non-existent. To an important degree, the industry has been the victim of its own history of wild rice speculators, who relied on strict secrecy and even false and misleading market information to insure exploitation of production and price variability. Even though market conditions changed with the introduction of cultivated wild rice, distrust remains and has impeded progress and cooperation in the industry.

A recent study of improving the marketing of California lettuce summarizes the importance of economic information as follows:

"The need for economic information for marketing food products is widely recognized. It is viewed as the lubricant for the wheels of industry whether for making farming decisions, product marketing decisions by processors, or capital investment decisions by individuals and businesses.

"When the amount, timing, or accuracy of economic information is inadequate, there are often costly misallocations of resources. As the quantity and quality of economic information increases, uncertainty diminishes, and the decision-making process is enhanced."⁴

Lettuce growers in California began a program of exchanging economic information in the early 1970s. Analysis of the program indicated that it reduced uncertainty and price variability and allowed better planning for more efficient production and marketing.

The wild rice industry might profit from the experience of the lettuce industry. Without timely economic information participants in the wild rice industry must make decisions as producers, processors, and buyers that they may not have made if full information were available. Inasmuch as the true market conditions will eventually prevail despite the lack of information, these participants suffer the consequences of acting on inaccurate or incomplete information. The industry as a whole may also suffer from the misallocation of resources; growth of the market consequently would be retarded.

Much basic information on wild rice production, stocks, and prices could be released without harm to indi-

⁴Garyan, Kinney, Pisani, and Skinner. "Lettuce Growers Find Information Exchange Improved Marketing Effort." *Farmer Cooperatives*, U.S. Department of Agriculture, Agricultural Cooperative Service, November 1983, p. 6.

vidual firms, especially if it were released to an independent third party, such as the Minnesota Agricultural Statistics Service, that could aggregate data so individuals could not be identified. Such information would reduce uncertainty and costly misallocations of resources in the wild rice industry.

SUMMARY

Evidence of rapid expansion in both the supply and demand for wild rice is impressive. Cultivated wild rice has reduced interyear production variability and also made it possible to expand production. This has stabilized prices and reduced uncertainty. Expanding product development and market promotion have stimulated the demand for wild rice. Wild rice has been changed from a local and gourmet delicacy to an ingredient in mass-marketed foods.

Currently, it is estimated that the market demand is expanding at 26 percent per annum, a vigorous rate exceeding most markets.

The dominance of the cultivated wild rice industry is clearly established. This segment will continue to produce 80 percent or more of each year's crop. But this producing sector may not have developed without the introduction of the wild rice blend market. This demand sector is the major market outlet for the supply. However, its future success and profitability cannot be assured without a continued stability in supply and prices.

Thus, the interdependence of the primary producers and users is established. Though the cultivated industry would be much smaller today had it not been for the introduction of wild rice blends, so it is that the future of wild

rice demand depends on the continued stability and growth in production of cultivated wild rice.

It is in the best interest of producers to gage their production expansion to the rate of demand expansion. If supply outstrips demand, price will fall precipitously. It is in the best interest of food manufacturers to innovatively develop and market new wild rice products at rates geared to the rate of supply expansion. To do otherwise wastes development and advertising resources better spent elsewhere. Each market segment has a hand in the continued success or future decline of the other. Their inter-cooperation is essential. Future growth and stability in the wild rice industry will be assisted by improved market information.

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