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The Wild Rice Industry: Economic Analysis of Rapid Growth and Implications for Minnesota

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and Implications for Minnesota

by

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The Wild Rice Industry: Economic Analysis of Rapid Growth
and Implications for Minnesota

by

Ronald N. Nelson and Reynold P. Dahl¹

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EXECUTIVE SUMMARY

Wild rice production increased from 11 million unprocessed pounds in 1982 to 33.3 million in 1985. Most of this growth was due to acreage and yield increases in California's Sacramento Valley. During the same period Minnesota's production increases were moderate. In 1985, Minnesota produced 12.9 million unprocessed pounds of wild rice on 25,000 cultivated acres with yields of 470 unprocessed pounds per acre, while California produced 19 million unprocessed pounds on 15,400 acres with yields of 1,250 unprocessed pounds per acre. Poor weather conditions caused a small lake wild rice harvest in both Minnesota and Canada. The share of lake wild rice in the total supply will decline as the cultivated industry continues to grow.

Twenty-five major processing plants in the U.S. and Canada processed an estimated 31.4 million unprocessed pounds of wild rice in 1985. A shortage of processing capacity in California caused over one-third of

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the state's production to be shipped to Minnesota for processing. Within a few years, an additional seven processing plants could be built in Minnesota and California. Presently in California, two of these plants are under construction, one of which may be in service this crop year. Estimated wild rice sales during the 1985/86 marketing season were 15.2 million processed pounds, an increase of 300 percent over the 1982/83 marketing year. Food manufacturers accounted for 64 percent of sales. However, the estimated carryover from the 1985/86 marketing year will total 10 to 15 percent of estimated sales. Wild rice prices declined in the 1985/86 marketing year, possibly ending a trend of stable prices since 1982. Prices to Minnesota growers ranged from \$2.45 to \$3.10 per processed pound in 1985/86 -- down from \$3.10 to \$3.25 in 1984/85. Prices paid California growers averaged about 50 cents per processed pound lower in 1985/86.

California holds a near three-fold yield advantage over Minnesota because the dry summer climate inhibits plant disease formation, and a requirement to annually seed allows growers to select the highest-yielding varieties available. In contrast, Minnesotas' humid summers create more plant disease problems, and Minnesota growers harvest volunteer fields where yields decline over time. A comparison of Minnesota and California wild rice crop budgets show that while California production costs per acre are higher and wild rice prices are lower than in Minnesota, these disadvantages are offset by a large yield advantage and greater recovery yield of processed wild rice per pound of unprocessed wild rice in California. Therefore, California grower returns over cash costs are nearly \$400 per acre higher than net returns to Minnesota growers. Based on the crop budget estimates, the variable

costs of wild rice production in California are \$1.00 per processed pound and 40 cents per unprocessed pound, while in Minnesota, the variable costs are between \$1.45 and \$1.95 per processed pound.

Disadvantages of wild rice production in California include the potential for an excess supply of wild rice, and a sharp fall in producer prices that may result from the ease of switching from rice to wild rice production in the Sacramento Valley. Capital investments are likely contingent on the continuation of current prices. Indications are that 25 percent of the 1986/87 crop was grown without production contracts. These growers may not find a market for this production at prices that will yield satisfactory returns. California growers also face serious environmental pressures against agriculture which may cause barriers to industry growth. California wild rice production has escaped the yield-reducing effects of pests to date. Agriculture experience dictates that problems will eventually occur, reduce yields, and raise production costs. Problems exist in yield losses to shattering, unexact nitrogen management, and poorly-understood stand establishment factors. The marketing problems of slow payments to producers and insufficient local processing capacity are also disadvantages to growing wild rice in California.

California producers recently adopted by referendum the California Wild Rice Program. This marketing order establishes a seven member producer advisory board. This board has the power to support wild rice research, sales promotion and market development; to develop and enforce quality standards; and to establish a stabilization pool. Government involvement in markets through marketing orders is designed to improve market performance. This marketing order has potential significance for

every firm in the wild rice industry, particularly as a source of information on wild rice production, prices, costs, stocks. It is an important new factor in the wild rice market which should be closely monitored.

Minnesota growers will have to raise yields and reduce production costs if they are to remain competitive. Minnesota growers are currently expanding acreage, raising yields, and making improvements to existing acreage to lower production costs. Other developments to improve the competitive position of the Minnesota industry are beyond the control of individual growers. These include the development of an economically efficient method to kill volunteer seed; development of higher-yielding, disease-resistant wild rice varieties; labeling of necessary pesticides to control current pest problems; improved fertilization management techniques on Minnesota organic soils; and increasing the accessibility to undeveloped land to increase wild rice acreage. All these activities require the dedication of agricultural scientists to their research and the cooperation of the Minnesota industry. More importantly, these activities require the financial and legislative support of both federal and state governments.

INTRODUCTION

Research on the economics of wild rice production and marketing began at the University of Minnesota Department of Agricultural and Applied Economics in 1982. The first phase of this work culminated with the publishing in 1984 of Wild Rice Production, Prices, and Marketing by Winchell and Dahl², a historical and modern overview of the economics of the wild rice industry. This report highlighted the development and rapid growth of cultivated wild rice in Minnesota, and later the beginning of a fledgling industry in California. The result has been a rapid, relative decline in importance of lake wild rice from natural stands. This report also described for the first time the marketing channels for wild rice, and the differentiation of wild rice into distinct markets for blends and for pure wild rice.

The wild rice market continues to grow at a vigorous pace, both by sizeable increases in production and by a significant growth in sales. From 1982 to 1984, cultivated wild rice production doubled without a large decrease in wholesale price, indicating that the demand for wild rice has kept pace with supply. But in 1985, another large increase in production has reduced prices.

The continuing challenge to the wild rice industry will be to gear annual production expansions to the market's capacity to absorb wild rice. An investigation into the economic factors which will determine the success or failure of the wild rice industry to meet this challenge

²Elizabeth H. Winchell and Reynold P. Dahl, Wild Rice Production, Prices, and Marketing, University of Minnesota, Agricultural Experiment Station, Miscellaneous Publication 36-1984.

is the purpose of this report.

OBJECTIVES

Specifically, the objectives for current research are to:

- (1) Update production estimates for cultivated wild rice and estimates of wild rice harvests from natural stands;
- (2) Evaluate the impacts of recent expansions in wild rice production on the existing marketing channels;
- (3) Where possible, obtain and evaluate data on carryover stocks that may result from the large production increase generated in the 1985/86 crop year;
- (4) Evaluate the impacts of competition between Minnesota and California growers by analyzing their costs of producing cultivated wild rice;
- (5) Analyze the effects of recent acreage expansions on the wild rice industry, particularly in Minnesota; and
- (6) Study the role of better economic information on production, prices, costs, and stocks in stabilizing and strengthening the wild rice industry.

METHODOLOGY AND SOURCES OF DATA

This study is based on data and information collected from primary sources through personal interviews in field surveys. Data collection began with a twenty-six day visit during January and February, 1986 to the wild rice production and processing regions of California. Interviews were conducted with California wild rice growers, processors,

marketers, and both county and state public officials. This process continued during March, 1986 with visits to northern Minnesota. Interviews were conducted with wild rice producers who independently market some or all of their crop; the management of the three wild rice cooperatives, i.e., Minnesota Rice Growers, Inc., United Wild Rice, Inc., and the Independent Wild Rice Producers Association; wild rice processors, and wild rice marketers. The cooperation received from the wild rice industry was excellent.

WILD RICE PRODUCTION - UNITED STATES AND CANADA

Significant increases in wild rice production have occurred since 1982 when Winchell and Dahl reported a estimated harvest of 11 million unprocessed pounds.¹ By 1985, an estimated 33.3 million unprocessed pounds were produced. In these three years, while Minnesota cultivated production showed modest annual growth, California production has soared (Table 1).

The most dramatic production increases occurred in 1985 when California production reached an estimated 19.0 million unprocessed pounds. This growth has primarily been the result of an expansion in acreage, from about 2,400 acres in 1982 to 7,300 in 1984, and to 15,400 in 1985. Approximately 83 percent of this acreage is in the rice lands of the Sacramento Valley.

Minnesota's growth in cultivated production has been less dramatic, resulting from increases in both acreage and yields. It is estimated that Minnesota has some 25,000 acres in production with yields averaging about 470 unprocessed pounds. Yields in California run considerably higher, averaging about 1,250 unprocessed pounds to the acre.

Since 1982 the annual harvests of wild rice from Minnesota and Canadian lakes have sharply declined in importance relative to cultivated production. Following the established pattern of one large crop out of every four, an estimated 3.2 million unprocessed pounds were harvested in 1984, the largest crop since 1980 when an estimated 5.3 million unprocessed pounds were harvested. For 1980 this harvest represented

¹Winchell and Dahl, Wild Rice, p. 9.

Table 1. Production of Wild Rice by Method and Producing Area,
United States and Canada, 1983 - 1985 Crop Years.¹

(1,000s of Unprocessed Pounds)

CROP YEAR	Cultivated - U.S.			Lake - U.S. and Canada					GRAND TOTAL
	MINN ²	CALIF ³	TOTAL CULT	MINN ⁴	ONT ⁵	MAN ⁶	SAS ⁷	TOTAL LAKE	
1983	8,000	3,000	11,000	1,200	190	336	523	2,249	13,249
1984	9,097	7,739	16,836	1,350	400	400	1,074	3,224	20,060
1985	12,930	19,033	31,963	403	36	625	313	1,377	33,340

1. This table provides a continuation of Winchell and Dahl, Wild Rice, Table 2, p. 9. They reported production estimates in processed pounds, using a 40 percent yield rate of processed wild rice from unprocessed wild rice. Subsequent experience has indicated that processing return rates vary greatly from area to area. Thus, production figures will be listed in units of unprocessed pounds. Processed pound units will be used to discuss marketing data.

2. Minnesota Paddy Wild Rice Research and Promotion Council, Grand Rapids, Mn. Data for 1984 and 1985 include allowances for retained seed estimates.

3. Data for 1983 estimated from acreage and average yields obtained from the California industry. Data for 1984 are estimates tabulated from a survey of California County Agricultural Commissioners. Data for 1985 are tabulated from wild rice processor and marketer surveys. Data for 1984 and 1985 included allowances for seed estimates.

4. Minnesota Department of Natural Resources for 1983 and 1984 data. Data are estimates and subject to error. Estimates for 1985 are tabulated from wild rice processor and marketer surveys.

5. Karen Cederwall, Wild Rice Report 1985, Northwestern Region, Ministry of Natural Resources, Ontario, February 1986, Table 2, p. 17, and p. 25. Data are estimates and subject to error.

6. Manitoba Department of Natural Resources estimates of lake harvests, subject to error.

7. Saskatchewan Department of Agriculture and Saskatchewan Indian Agriculture Program (SIAP), Inc. Data prepared from actual seeded lake harvests.

about 45 percent of total wild rice production. But in 1984 the lake harvest represented only 16 percent of total production, demonstrating the rapid rise to dominance of cultivated production.

The promising area of lake production expansion continues to be in northern Saskatchewan where lakes are seeded with wild rice. Production in 1983 totaled 523,000 unprocessed pounds and then more than doubled in 1984 to nearly 1.1 million unprocessed pounds (Table 1). About 7,000 seeded lake acres were harvested in 1984, with an expansion to about 11,700 acres in 1985.²

Disaster struck the lake industry in 1985 when poor weather conditions throughout much of the growing season resulted in the poorest lake harvest since 1978. Total lake wild rice production in 1985 is estimated to be only 1.4 million unprocessed pounds.

Although expansion in Saskatchewan production is expected to continue, the lake industry is heavily dependent on favorable weather. The share of lake wild rice in the total supply will likely decline as the cultivated industry continues to grow.

²Pab Orcajada, Wild Rice Agrologist Memorandum to Murdock MacKay, Regional Coordinator, SIAP Program. "Wild Rice Activities - Crop Year 1984", December 3, 1984, p. 4.

WILD RICE MARKET SALES - UNITED STATES AND FOREIGN

Wild rice harvested from lakes and cultivated paddies requires processing before it is sold for consumption. However, some wild rice must be withheld from processing for use as seed for the next year's crop. This seed may be used to replant existing acreage as occurs in California, for reseeding volunteer paddies where wild rice stands are thin as is commonly done in Minnesota and Canada, and for planting new, expansion acreage for the next wild rice crop which can occur in all producing areas. The amount of wild rice seed held back at the time of harvest is dependent on the planning decisions made by growers who will use the seed themselves or sell it to others. Table 2 gives estimates of seed reserves and processing volume for the 1985/86 crop year.

A major proportion of each year's wild rice harvest is processed for human consumption. A total of 25 major processing plants in the United States and Canada processed an estimated 31.4 million unprocessed pounds of wild rice in 1985 (Table 2). Three of these plants are located in California, three in Canada, and 19 are in Minnesota. Of the 27 major processing plants operating in 1982, four have gone out of business, three new plants have come on line and one plant did no processing of wild rice in 1985.

Plans exist to build as many as five new processing plants within the next few years. Four would be located in California and one in Minnesota. As of this date, it appears that the fourth processing plant located in California may be in service for processing the 1986 harvest, while a fifth California plant is currently under construction. One small plant in Idaho will likely be ready to process wild rice this

Table 2. Wild Rice Seed Reserves and Grain Available for Processing, 1985 Crop Year.

Area	Est. 1985 Harvest	Est. Seed Retained ¹ ----- 1,000s Unprocessed Pounds -----	Est. Volume Processed
CALIF CULT	19,033	1,800	17,233
MINN CULT	12,930	140	12,790
MINN LAKE	403	---	403
CANADA	974	50	924
TOTALS	33,340	1,990	31,350

1. For California, at a seeding rate of 90 lbs/acre, this quantity is sufficient for planting 20,000 acres in the 1986 crop year. For Minnesota, at a seeding rate of 40 lbs/acre, this quantity is sufficient for 3,500 additional and/or reseeded acres. The Canadian estimate is for lake acreage expansion in Saskatchewan.

summer, handling wild rice from a few hundred acres located in northern Idaho. In addition, one plant in Minnesota and two in California expect to expand capacity over the next one to two years.

Processors reported a total annual processing capacity for the 1985 crop year of almost 39 million unprocessed pounds, an increase of about 73 percent over the 1982 crop year.

Though this capacity was adequate for processing the 1985 crop, it was located in the wrong areas.³ Six Minnesota-based processors reported processing California-grown wild rice amounting to approximately 5.8 million unprocessed pounds, or 34 percent of all processed California-grown wild rice. Though a wide variety of transport methods were utilized to carry unprocessed wild rice to Minnesota, it is believed that the vast majority of it arrived in good condition. Shipping times from California to Minnesota ranged from 48 to 72 hours. Costs of this transport were given as between 4.5 to 7 cents per unprocessed pound, with a weighted average of 5.8 cents.

Wild rice sales by processors, marketing and bargaining cooperatives, independent growers, and other first handlers of processed wild rice were estimated to total as much as 15.2 million pounds of processed wild rice in the 1985/86 marketing year.⁴ This represents a 302 percent increase over the 1982/83 marketing season.

Table 3 shows the estimated breakdown of these sales by market

³California wild rice is harvested and processed prior to the Minnesota harvest. Therefore, there is no competition between the states for processing facilities. In fact, processors are able to use existing equipment for a longer season.

⁴This value allows for no carryover. Information on the approximate size of a carryover cannot be accurately determined until the following marketing year when marketing behavior can be observed.

Table 3. Estimated Sales Volume of Processed Wild Rice
by Marketing Outlet, 1985/86 Marketing Year.¹

Market Outlet	Sales in Pounds	% Increase Over 1982/83 ²	% of Total 1985/86	% of Total 1982/83
Food Manufacturers	9,747,795	296	64.3	65.4
Grocers-Other States	1,691,586	732	11.2	5.4
Grocers - MN	1,319,479	284	8.7	9.1
Restaurants - Other States	1,145,732	283	7.5	7.9
Other Retailers - Other States	297,329	2,222	2.0	0.3
Restaurants - MN	291,194	166	1.9	2.9
Other Retailers - MN	230,558	6,872	1.5	0.1
Wholesalers	208,796	70	1.4	3.3
Consumers - Direct	150,449	74	1.0	2.3
Canadian Markets	61,271	4,706	0.4	0.0
Other Non-US Markets	13,552	---	0.1	---
TOTAL	15,157,741	302	100.0	---

1. Includes the estimated wild rice marketed from the 1985 crop year and prior carryover as reported, or estimated for Minnesota, Canadian, and California processors and marketers, United Wild Rice, Inc., Minnesota Rice Growers, Inc., and independent growers. The marketing year or season is defined as the period beginning June 1 of any year and continuing through May 31 of the following year. Totals do not include possible 1985/86 carryovers. Estimates of carryover are difficult to make until the following marketing season when marketing behavior can be observed.

2. For 1982/83 market sales figures, see Winchell and Dahl, Wild Rice, Table 35, p. 29.

outlet. All categories of wild rice buyers showed significant increases in purchases. Many new buyers of wild rice have entered the market since 1982. Food manufacturers accounted for 9.7 million pounds, more than three-fifths of total sales. This is nearly three times the wild rice purchased by this group in the 1982/83 marketing year. However, their market share has declined slightly from a level of nearly two thirds of the market in the 1982/83 marketing year. The next three largest buyers -- grocers outside Minnesota, Minnesota grocers, and restaurants outside Minnesota -- switched positions in the 1985/86 marketing year as compared to 1982/83.

A primary interest of this research is the economic condition and wellbeing of those Minnesota growers who independently market their wild rice crop. Since 1982, three additional farms are now growing wild rice and two farms have ceased production. This net gain of one brings the total of Minnesota independents to 39. Most of the wild rice produced by this group is marketed through processors, and a greater number of independents are choosing this option (Table 4). Although the volume of wild rice marketed by these farmers has expanded from 1.1 million processed pounds in the 1982/83 marketing year to 1.6 million in 1985/86, their share of Minnesota-grown wild rice has fallen from 38 to 32 percent.

Many of these Minnesota independents have been members, at one time or another, in wild rice marketing cooperatives like Minnesota Rice Growers, Inc., and United Wild Rice, Inc. For a variety of reasons, these independents chose to leave these organizations. Yet some still sought the advantages of group marketing.

In early 1983, a third wild rice cooperative was organized under the

Table 4. Marketing Outlets for Wild Rice Produced
by Independent Minnesota Growers, 1985/86 Marketing Year.

Market Outlet	Processed Pounds	Percent of Total Processed Pounds		Percent of Growers Using This Outlet	
		1985/86	1982/83	1985/86	1982/83 ¹
Processor	889,268	55	47	68	56
Food Manufacturer	155,904	9	7	11	12
Wholesalers	93,000	6	7	11	14
Restaurants - Out of State	36,360	2	--	13	9
Restaurants - MN	3,580	--	1	5	12
Other Market Outlets ²	55,468	3	2	18	20
Integrated Growers/Processors	368,571	23	22	11	11
Inventory	26,820	2	14	5	19
Total	1,628,971	100	100	--	--

1. The value for market sales and percentages for 1982/83 are from Winchell and Dahl, Wild Rice, Table 32, p. 28.

2. Other market outlets includes sales to grocery stores, specialty shops, sales from the home, and mail order sales.

name of the Independent Wild Rice Producers Association. This group was formed to secure the benefits of group marketing, yet members have maintained an independence by having the choice to market all of their wild rice, some portion of their crop, or none at all, with their cooperative in any given crop year. As a registered farm cooperative, they have secured loans through the Farm Credit Services Bank for Cooperatives to help financially support grower inventories until they are sold. Currently, the Association claims membership from about one-quarter of the independent Minnesota growers.

CARRYOVER STOCKS AND PRICES

Carryover Stocks

The size and distribution of wild rice stocks carried over from one marketing year to the next are not available. Data on inventories continue to be the most jealously guarded secret in the industry. This obsession with secrecy about stocks seems to be rooted in the industry's history of speculation in a small-volume commodity where strict secrecy ensures full exploitation of price fluctuations. But in recent years as the annual supplies of wild rice have undergone vigorous growth and the year-to-year, up and down harvests have been eliminated, more and more information has been shared within the industry. Nevertheless, information on industry-wide stocks is lacking.

Sellers operating in the lower stages of the wild rice market work from a supposition that if the buyer believes that significant stocks of wild rice exist, either held by the seller or by the industry as a whole, then the seller is dealing from a position of relative weakness. In addition, very few low-stage marketers - in particular, growers and processors - have practical experience or professional training in large-scale food marketing. Even those who have been involved in wild rice marketing for many years admit to be somewhat at a disadvantage when dealing with the professional buying staffs of large U.S. food manufacturing companies like General Foods, Pillsbury, and Lipton. As these buyers become more familiar with wild rice, the seller's stock position may be his only proprietary information. Therefore, if the level of stocks can be disguised and a perception of wild rice shortages can be generated, then these sellers of wild rice gain confidence,

believing that they can now gain negotiation power to dictate prices and contract specifications.

A few of the processors and marketers interviewed in this study were willing to provide information on the volume and distribution of wild rice inventories. There is wide belief that, in general, the stocks of wild rice that were held over from the 1984/85 marketing year were unusually low, with certain grades of wild rice unavailable in sufficient quantities to meet demand. This was especially true for what was once considered the less desirable wild rice grades "B" and "C", now popular with food manufacturers for their superior blending properties. This same group of processors and marketers believes the stocks remaining after the 1985/86 marketing year were higher than in recent years, with surpluses primarily in grade "A" wild rice, commonly called table or gourmet wild rice, and a surplus of broken grades. As in the 1984/85 marketing year, the demand was strong for wild rice of grades "B" and "C" throughout the marketing year; and if not depleted by year's end, these grades were valued higher than the grade "A". The one exception is the grade "A" Canadian variety which was highly valued given the poor harvest of the 1985 crop year.

The estimated industry-wide carryover inventory after the 1985/86 wild rice marketing year totalled 10 to 15 percent, or from the total in Table 3, approximately 1.5 to 2.3 million processed pounds. This estimate of carryover is based on limited information obtained from a few, though informed, industry sources and is subject to error.

Prices and Carryovers

There have been significant price declines in producer prices during

the 1985/86 marketing year. As reported by Minnesota growers, 1983/84 producer prices were in the range of \$3.25 to \$3.30 per processed pound. These slipped slightly in 1984/85 to \$3.10 to \$3.25. But in the 1985/86 marketing year, prices paid to producers were in the range of \$2.45 to \$3.10, with many in the band between \$2.50 to \$2.80. Indications are that those Minnesota growers who were affiliated with and marketing through wild rice cooperatives received prices 25 to 40 cents higher than those growers who independently marketed their 1985 crop.

There are several implications of a significant carryover from the 1985 crop. First, the common use of delayed price arrangements by some buyers has put severe economic constraints on the financial foundations of some growers. Some buyers set their 1985/86 prices for wild rice very late in the marketing year. Over the past few months as the 1985/86 marketing year drew to a close, with demand drying up and a greater awareness of supply excesses, these growers have likely settled for prices on the low end of the 1985/86 price spectrum. Second, there is a general shortage of operating capital within the wild rice industry available for financing inventories. In the past, speculators commonly purchased excess supplies of wild rice, injecting operating capital into the industry. With the advent of a strong cultivated industry and a stabilized wild rice supply, this source of operating capital is quickly used up. Today, it is not by choice that wild rice growers and first handler-marketers hold sizeable inventories. In this past marketing year, reports of desperate attempts to unload wild rice inventories for "crazy prices" were commonly heard.

Third, an increased awareness within the Minnesota industry of the low prices paid to California growers has put great pressure upon

Minnesota-based first-handlers of unprocessed wild rice to compete in the California market. California growers can tolerate markedly lower prices because their superior per-acre yields overshadow their high production costs. This strong competition between Minnesota and California growers for buyer dollars has probably put the most pressure on Minnesota growers. With the negotiation of production contracts in California, and this states' earlier harvests, marketers fill a large portion of their wild rice requirements. This puts many Minnesota growers into a position of selling in a new form of residual market, created even before their grain is harvested. As one marketer describes the situation: "I want to buy Minnesota, but I can't afford not to buy California!" Since a majority of these first handlers have business and personal ties to the Minnesota industry, many of them feel an obligation to deal in the Minnesota market. But 1985/86 prices for California wild rice as low as \$2.00 per processed pound turned out to be irresistible to these marketers. These low prices have forced Minnesota growers to lower their price expectations and more readily accept the decline in prices seen this past marketing season. The effects of competition between growers for marketer dollars will continue to bring prices closer together. What effect this will have on their ability to effectively compete will be a factor in determining their future in the industry.

DEVELOPMENTS IN THE MINNESOTA WILD RICE INDUSTRY

The Minnesota wild rice industry has been concerned with two major public issues in recent years involving wild rice production; namely, the setting of water withdrawal limits by the Minnesota Department of Natural Resources (DNR) on the Clearwater River; and, the leasing of state-owned lands for development into wild rice paddies.

Protected Water Flows on the Clearwater River

A large portion of the Clearwater River was substantially altered by dredging in the 1950s to help reduce flooding of the surrounding agricultural area. Wild rice development, primarily along this dredged portion of the river began in 1968, expanded to about 6,000 acres of flooded paddies in 1973, and reached about 11,000 acres in 1983. During several interceding dry years, such as 1973 and 1981, conflict for water occurred among wild rice growers, and complaints from downstream river users concerned with fishing and other recreational uses were voiced to the DNR. In 1981, the DNR proposed protected flows for the river. From 1981 to 1983, the DNR met several times with wild rice growers from the Clearwater River area in an attempt to negotiate an agreement on a protected flow and a water allocation plan. Finally, in June, 1983, a formal "contested case" hearing was held at the request of growers who hoped to prevent the establishment of overly-restrictive regulations on maintaining a minimum flow on the Clearwater River.

From the hearings' findings,⁵ it was established that wild rice farming near the Clearwater River provided substantial flood control benefits and superior habitat for waterfowl and wildlife. Wild rice agriculture reduced downstream flooding because of the appropriations of growers in the springtime.⁶ Wild Rice agriculture also created other benefits beyond its immediate surroundings. In the summer, river flows are augmented by seepage from paddies; and, in the fall, flows are augmented by the releases of water from paddies.

The DNR did not contest these flood control benefits of wild rice production. Instead, they labeled them as having a significant impact on planned flood control measures. In fact, maximized appropriations during floods were one of the Departments' goals in setting the proposed protected flow rates.

Wild rice agriculture also impacted on both waterfowl and wildlife. The flooded wild rice paddies transformed the land into an almost ideal waterfowl management area. During the late spring, summer, and early

⁵State of Minnesota, Office of Administrative Hearings for the Department of Natural Resources, Finding of Fact, Conclusions, Recommendation, and Memorandum: In the Matter of the Establishment of Protected Flows on a Portion of The Clearwater River Limiting Water Appropriation During Low Flows, by Allan W. Klein, Hearing Examiner, December 2, 1983.

⁶In 1978, the Red Lake Watershed District joined with other watershed districts along the Red River of the North to form a coordinated project on flood control. The major thrust of this program was the construction of upstream floodwater impoundments. In the Red Lake Watershed District's jurisdiction alone, it was estimated that 200,000 acre-feet of impoundments were needed. As of 1983, the District had created 6,000 acre-feet, at a cost ranging between \$50 to \$1,000 per acre-foot. The District's engineer estimated that wild rice growers, by impounding 20,000 acre-feet, had saved the District between \$6 to \$8 million in construction costs alone, not including the ongoing maintenance costs which the District incurred in its other impoundments. This storage was at no charge to the District, and constituted 10 percent of its storage needs. Ibid., p. 5.

fall, the wild rice paddies were considered as equal, if not better than, DNR-managed wildlife areas in terms of waterfowl breeding and usage. Other wildlife also used the paddies, and their productivity has been favorably compared with nearby wildlife management areas. Hunting, especially for waterfowl, was described excellent.

The DNR case for the establishment of a protected flow level on the Clearwater River was based primarily on the impact that limited water flow had on the rivers' uses in fishing, recreation, aesthetics, and waste water dilution. Secondly, the Department emphasized that Minnesota statutes were not "neutral" on the question of protected flows.

Fishing in the Clearwater River was considered good prior to dredging. Subsequent to dredging, interest in fishing diminished considerably along the dredged portions of the river where many of the wild rice paddies were developed. Complaints to the DNR seemed to be the greatest in years of low water. While some game fish (walleye, northern pike, and channel catfish) could be found, a composite of three DNR surveys taken in 1979 showed that about 92 percent of the fish identified in the river were rough fish, such as sheephead, redhorse, carp and stickleback.

It was further established that the habitat of the dredged channel was so poor that it did not serve as a spawning or rearing area in itself. However, a critical point that could not be established was whether the game fish available in the Clearwater River were reared upstream or downstream from the dredged channel. Nevertheless, the hearings established that the water appropriations by wild rice growers were reasonably related to the amount of water at downstream fishing locations, so that fishing on the river should be considered when

establishing grower appropriations. While separated geographically, the wild rice paddies and the fishing areas were connected hydrologically. The fact that they are separated by the dredged channel did not negate the importance of water appropriations on the fishery. Of course, the growers' water appropriations had no impact on what occurred upstream; so to the extent the source of game fish was upstream of the wild rice paddies, growers did not impact on fishing. However, if game fish migrated up the dredged channel, growers would impede their migration by affecting water levels in the dredged channel. But as mentioned above, the actual source of the game fish was not established.

Second, the concept of protected flows was already a part of DNR thinking in allowing wild rice growers to appropriate water. The first permit for water appropriation for wild rice production was issued in 1968. It contained no mention of a protected flow. However, it did contain a provision permitting the review of the water permit from time to time as additional hydrological data became available, and to amend the permit if it was determined that the appropriation was detrimental to the public interest. This provision has been consistently included in all water permits from 1968 to the present. Three years later, a new provision was added. As sufficient data became available, the DNR may require that pumping be curtailed during periods of low water to maintain a desirable minimum flow in the stream below the pumping point. This provision has also been consistently included in permits issued from that date forward.

In 1977, the Minnesota Legislature specifically directed the DNR to limit water appropriation permits "... so that consumptive appropriations are not made from the watercourses during periods of specified low flows

in order to safeguard water availability for instream uses ...".⁷ In 1980, the DNR adopted rules defining a "protected flow" as that flow necessary to accommodate instream uses, such as recreation, navigation, aesthetics, and fish and wildlife habitat.⁸ In addition, another law definitely favored the protection of the river, specifically prohibiting the DNR from issuing any water permit which was likely to cause pollution, impairment, or destruction of a natural resource, such as a river, so long as there was an alternate solution available. In this case, there was an alternative available, namely, the issuance of permits which provided for a protected flow of the river. Finally, this contested case hearing established the precedent that these statutes, and the rules adopted to define their application, could be used to justify the setting of protected water flows, even when those flows may result in economic hardships to appropriators. Indeed, economic considerations alone could not be used to allow the destruction of a river.⁹

The hearing found that the imposition of a year-round minimum protected flow of 36 cfs (cubic feet per second) would not substantially adversely affect growers, nor would it impair or destroy the fishery. For other recreation uses, the hearing established that springtime water appropriations by wild rice growers would be detrimental to their activity. But, during the summer and fall, water releases would favorably affect these uses. Therefore, based on the hearing examiner's recommendation, the DNR established on February 21, 1984, the level of 36 cfs as the protected flow limit for the Clearwater River. In the three

⁷Minnesota Statutes (1984), Section 105.417 (subd. 2).

⁸Minnesota Code of Agency Rules, paragraph 1.5050.

⁹Minnesota Statutes (1984), Section 116D.04 (subd. 6).

crop years subsequent to this adoption, this protected flow limit has not been a limiting factor in the amount of acreage flooded in the Clearwater River area.

Leasing of Public Lands for Wild Rice Farming

Minnesota farmers began cultivated wild rice production some twenty years ago. They quickly learned that a primary expense of cultivated production was the development and maintenance of the growing site. Most of the wild rice in Minnesota is grown on low, wet land not previously farmed. An "ideal" site for development of a wild rice paddy is one relatively free of timber and brush, and flat enough to avoid expensive grading. In addition, the site should be above the flood plain, so fields can be drained during late summer for harvest and tillage. An acceptable water source must be available from an adjacent stream, lake, or suitable ground source.¹⁰

Selecting a proper site for development can minimize the costs of initial paddy, dike, and ditch development. It can also minimize the cost of maintaining this investment.¹¹ This led growers to look at all potentially available lands, both privately and publicly held, to find

¹⁰ Ervin A. Oelke et al., Wild Rice Production in Minnesota, University of Minnesota Agricultural Extension Service Publication AG-BU-0546, p. 10.

¹¹ Some growers commission private studies to evaluate possible sites for development. One publicly available study found that a typical development of unimproved land into suitable wild rice acreage would cost about \$360 per acre. [Gregory C. Knopff, An Evaluation of State Agricultural and Wild Rice Leasing in Minnesota with Proposals for New Directions, A report to the Minnesota Land Bureau, February, 1983. p. 22.] Discussions within the wild rice industry frequently mention development costs within the range of \$500 to \$600 per acre. The level of cost that will be incurred is very site specific, and very much dependent upon how well a site matches the ideal characteristics mentioned above.

those few sites which possessed these ideal site characteristics.

Most of the land that has been developed into wild rice acreage in Minnesota is owned by growers. In general, financial assistance to develop land into wild rice fields would not be available to most growers if they did not own the unimproved land. Only about 10 to 15 percent of the 25,000 acres of cultivated wild rice is not owned by growers. A large percentage of this leased land is leased from the State of Minnesota.¹²

When the paddy industry started in the 1960s, potential producers had few problems finding suitable sites adjacent to water supplies. The Department of Natural Resources (DNR) created very liberal policies of leasing and selling lands for wild rice agricultural development. The DNR recognized the benefits that wild rice paddies could provide in flood control, and the ideal habitat for waterfowl that was created from this development. Annual lease rates were very low at \$1 to \$5 per acre, and state land was sold for as little as \$2 per acre. In general, ample acreage was available to wild rice growers.

These liberal land lease and sale policies continued up to about 1980. The land leases were very few in number, and the acreage involved was only a small fraction of one percent of the total acreage owned by the state. But as time passed, more and more growers entered the industry and they began running out of private land suitable for economically feasible development. Growers started looking more toward

¹²In 1982, it was estimated that about 4,500 acres of land was leased to wild rice growers from the state on 38 separate leases. [Ibid., p. 3.] Department of Natural Resources (DNR) estimates show about 4,700 acres of state land were leased to wild rice growers under 67 separate leases in 1985.

state lands as the primary future source of new wild rice acreage.

Increased demand to purchase or rent state-owned land caused the DNR to reevaluate its land policies for wild rice development. It became evident that past policies did not coincide with the traditional responsibilities of the DNR as the trustee of Minnesota's publicly-owned lands. Included in these responsibilities was to ensure that these lands earned a proper economic return to the public when leased or sold. The DNR also had a responsibility of ensuring that no use of state lands jeopardized conservation.

A change in DNR policies on wild rice lands took place in 1981. Wild rice lease rates were increased to 8 percent of the unimproved land value fixed at \$200 per acre, giving a yearly lease rate of \$16 per acre.¹³ Land sales were also sharply curtailed. Leases were written for periods of five to ten years, with many leases running the maximum. An important consideration in these leases was a provision which specified that the improvements on the land reverted to the state at the termination of the lease. This put a hardship on growers if there was not an ample duration of the lease to ensure a recovery of development costs. Unfortunately, there were no legal guarantees that this would happen. Minnesota statutes allowed the DNR to revoke leases with only a three month notice, not enough time to harvest a crop if the revocation came during the summer growing season. Also, some growers were informed that once their leases expired, they might be required to enter a competitive bid with other growers to renew the lease on land that they had developed.

¹³The reason for the 8 percent of land value is historical and is consistent with other commercial leases. Though somewhat arbitrary, there is not an extensive amount of private land rental information on wild rice paddies to set a precedent on what the rate should be. Ibid., p. 3.

These changes in land policies, coupled with rising production costs and lower wild rice prices, contributed to a slowdown in the growth of wild rice production in Minnesota at a time when production in California was increasing. To reduce the uncertainty of leasing land from the DNR, growers began to intensify their lobbying for appropriate legislation to protect prior investments in wild rice acreage, and to clarify the future of DNR land policies.

Minnesota growers joined together early in 1985, through the Minnesota Paddy Wild Rice Research and Promotion Council, in introducing legislation to designate, lease, and sell state lands suitable for wild rice agriculture.

The initial bills called for the duration of wild rice leases to be extended from ten to twenty years, with a review of lease rates every five years. Growers also sought lease rates of 5 percent of land values, comparable to other undeveloped agricultural lands leased by the state.¹⁴

After many months of committee hearings and bill revisions, a new statute on leasing lands for wild rice farming was adopted. The following session of the Minnesota Legislature brought about the law's latest revision (Figure 3). Modifications were also made to a second related statute requiring the DNR to provide six months notice of lease cancellation. This ensured that no wild rice crop would be left unharvested if a lease was cancelled.¹⁵

The DNR is currently working with the Minnesota Department of Agriculture to draft appropriate policy guidelines to implement this

¹⁴Minnesota Wild Rice Council, Wild Rice News, March 25, 1985, p. 1

¹⁵Minnesota Statute, (1985 Supplement), Section 92.50 Subd. 1);
Minnesota Wild Rice Council, Wild Rice News, April, 1986, p. 2.

legislation. The new leasing policy is expected to be available sometime in 1986. While Minnesota wild rice growers have made good progress in solving their state land lease problems, they are continuing their efforts to make state land more accessible for wild rice production.

Minnesota Statutes, 1985 supplement

92.501 [LEASING OF PEAT LANDS FOR WILD RICE FARMING.]

Subdivision 1. [AUTHORITY TO LEASE.] The commissioner of natural resources in consultation with the commissioner of agriculture may, at a public or private lease sale and at the prices and under the terms and conditions the commissioners may prescribe, lease any state-owned lands under the commissioner's jurisdiction and control for the purpose of farming of wild rice. Priority must be given to lands which are accessible and adjacent to existing wild rice production areas and requested for leasing by wild rice producers. The term of a lease under this section must be offered for a minimum of 20 years but may be for a shorter period at the option of the lessee. If a lease is issued prior to the adoption of the rules for the implementation of this section and for a period of less than 20 years, the lease must be converted to a minimum 20-year lease after the rules have been adopted, at the option of the lessee. Leases must be accepted or denied within 60 days of application. If a lease is denied, written notice must be given stating reasons for denial. The lease rate must be adjusted every five years to reflect market values. The money received from the leases under this section must be credited to the account that receives the proceeds of a sale of the land.

Subdivision 2. [WILD RICE LAND DESIGNATION AND DEVELOPMENT.] The commissioner of natural resources and the commissioner of agriculture shall prepare a plan that designates state land for wild rice production including an inventory of the number of acres of land appropriate and suitable for wild rice development and leasing in each county. Proposed mineral exploration does not exempt land from being designated for wild rice development.

Subdivision 3. [Rules.] The commissioner of natural resources may adopt rules to implement this section.

Figure 1. Minnesota Statute (1985 Supplement), Section 92.501.

DEVELOPMENTS IN CALIFORNIA WILD RICE PRODUCTION

California wild rice acreage is divided between three climatic regions: the rice-producing counties of the Sacramento Valley, the river valleys and lowlands in Mendocino county along with areas surrounding Clear Lake in neighboring Lake county, and the mountain valleys of Shasta and Modoc counties of northeastern California (Figure 2). The most dramatic production expansion between 1982 and 1985 occurred in the Sacramento Valley. In 1982, some 1,600 acres of wild rice were planted in Colusa and Sutter counties on acreage originally developed for rice production. By 1985, nearly 12,700 acres of wild rice replaced rice in a total of seven Sacramento Valley counties.

Expansions are also evident in the two smaller regions of production. In northeastern California, 300 acres of wild rice were harvested in 1982. This has since grown to approximately 1,600 acres for 1986. Similarly, to the west in Lake and Mendocino counties, about 500 acres in 1982 has expanded to nearly 1,100 acres in 1985.

Excess Rice Production and Falling Consumer Demand Stimulate Wild Rice Production Expansion

The strong interest in wild rice production by traditional rice farmers in the Sacramento Valley is attributable to large supplies and low rice prices. Over the period 1980 to 1984 California annually produced 20 percent of the U. S. rice crop with over 90 percent of



Figure 2. California Counties Producing Wild Rice, 1985 Crop Year.

California's rice acres located in the Sacramento Valley.¹⁶ Short and medium grain varieties used in domestic food processing and brewing industries were produced on most of this acreage. Higher valued, long-grain rice has been planted in the last few years.¹⁷

While California is a relatively small U. S. rice producer, year-end carryovers of rice from California for the period 1980 to 1984 rose in proportion to the total U. S. carryover for this same period. At the end of the 1979/80 crop year, California's carryover reflected 22 percent of the total U. S. carryover, closely matching their production share of 20 percent. This carryover ratio climbed to 34 percent by 1980/81, and continued to rise to 39 percent in 1981/82, and to 43 percent at the close of the 1982/83 crop year. In the 1983/84 crop year when the PIK (Payment-In-Kind) farm legislation reduced production of short and medium grain rice by 42 percent from the prior crop year, California's beginning carryover was 40 percent greater than its production.¹⁸

Excess rice production was not the only reason for the rising California-to-U.S. carryover ratio. Since the 1980/81 crop year when California rice production reached a record high of nearly 41 million hundredweight (CWT), production has steadily declined to an estimated

¹⁶California. Department of Food and Agriculture, California Crop and Livestock Reporting Service, Field Crop Statistics, 1982-83, p. 23.

¹⁷Planted long-grain rice acreage in California expanded from 14,000 acres in 1982/83 to 57,000 acres in 1984/85. This acreage represents only 2 and 13 percent of total California rice acreage in those crop years. [U.S. Department of Agriculture, Economic Research Service, Agriculture Information Bulletin Number 470, Rice: Background for 1985 Farm Legislation, p. 9.] For the 1983/84 crop year, California produced 92 percent of U.S. short-grain production, 61 percent of U.S. medium-grain production, and 4 percent of U.S. long-grain production. [U. S. Department of Agriculture, Economic Research Service, Rice Outlook and Situation Report, RS-45, March 1985, Table 14, p. 26.]

¹⁸USDA, ERS, Rice Outlook RS-45, March 1985, Table 1, p. 6.; USDA, ERS, Rice: Background, AIB #470, p. 7.

27.4 million CWT in crop year 1984/85 (Table 5). But, during this same period, demand for U. S. short and medium grain rice fell from 51.4 million CWT in 1983/84 to a projected 40.0 million CWT in 1985/86, resulting in declining, yet still large, stock-to-use ratios (Table 6).

In recent years, the returns to rice farming in California after the payment of cash and capital replacement expenses have approached zero. Table 7 shows rice production costs in California from 1980/81 to 1984/85 for two types of operations. First is the landlord/tenant operation, where the landlord pays taxes and assessments on the land, but no share of the production and harvesting costs. For this, and for the use of the land, the landlord receives about 25 percent of the crop. In this operation, net returns (receipts less cash expenses and capital replacement cost) declined sharply in 1982/83 to \$6.88 per acre, primarily due to the provisions of the Agriculture and Food Act of 1981. This federal farm legislation repealed the rice allotment and market quota system, bringing the rice program in line with other grain programs.¹⁹ A drop in the average producer price from \$9.85 to \$7.21 per CWT (a decline of 26 percent) also contributed to this poor net return. Net returns rebounded in 1983/84 in response to higher prices, and to the PIK farm program for rice; but, again fell sharply in 1984/85 to \$3.25 per acre, when price declines and changes in the farm program depressed the industry.

Net returns to the full-ownership operation were higher during this period, but this is only true if the owner-operators are not compensated for their management skills and for taking risks. When these are

¹⁹For a summary of recent history on federal farm programs and rice legislation, see USDA, ERS, Rice: Background, AIB #470.

Table 5. California Rice Production,
1977/78 - 1984/85.

<u>Crop Year</u>	<u>Production (1,000 CWT)</u>
1977/78	26,248
1978/79	34,042
1979/80	36,386
1980/81	40,924
1981/82	35,848
1982/83	23,089 ¹
1983/84	30,283
1984/85	27,360

1. PIK Farm Program.

Sources: California, Dept. of Food and Agriculture, Field Crop and Livestock Reporting Service, Field Crop Statistics, 1969 - 1978, December 1979, p. 3, and 1979 - 1983, December 1984, p. 3.; USDA, ERS, Rice Outlook, RS-45, March 1985, Table 14, p. 26.

Table 6. Demand, Carryover Stocks, and Stock-to-Use Ratios,
U. S. Short and Medium Grain Rice, 1982/83 to 1985/86.

<u>Crop Year</u>	<u>Total Demand¹</u>	<u>Carryover Stocks</u>	<u>Stocks-to-Use Ratio</u>
	-----	Millions of CWT	-----
1982/83	46.1	44.7	97 %
1983/84	51.4	28.8	56 %
1984/85	43.0	25.7	60 %
1985/87 ²	40.0	18.4	46 %

1. Includes U. S. domestic use and exports.

2. Projected.

Source: USDA, ERS, Rice Outlook, RS-46, September 1985, Table 1, p. 5.

Table 7. Rice Production Costs, California, 1980-84¹

Item	1980	1981	1982	1983	1984
Cash Receipts:	----- Dollars per Planted Acre -----				
Total	697.05	671.87	489.34	582.15	534.86
Cash Expenses:					
Seed	25.79	30.68	31.33	24.15	26.28
Fertilizer	41.48	43.66	45.35	43.52	45.96
Chemicals	20.60	22.41	24.03	25.24	25.24
Custom Operations	48.54	52.90	55.08	57.75	57.80
Fuel, Lube, and Electricity	25.76	29.88	30.54	28.50	27.97
Repairs	20.16	22.00	23.69	25.15	26.24
Purchased Irrigation Water	18.37	19.81	21.43	21.84	22.38
Drying	37.62	45.43	49.72	51.26	51.35
Technical Services	1.42	1.42	1.42	1.42	1.42
Total, Variable Expenses	239.32	268.19	282.59	278.83	284.64
General Farm Overhead	41.00	38.03	53.59	54.13	55.16
Taxes and Insurance	18.85	18.96	16.44	18.68	19.55
Interest	100.39	87.87	82.97	118.12	120.37
Total, Fixed Expenses	160.24	144.86	153.00	190.93	195.08
Total, Cash Expenses	399.56	413.05	439.59	469.76	479.72
Receipts Less Cash Expenses	297.49	258.82	53.75	112.39	55.14
Capital Replacement	39.27	43.49	46.87	49.75	51.89
Receipts Less Cash Expenses and Replacement	258.22	215.33	6.88	62.64	3.25
Economic (Full Ownership) Costs:					
Variable Expenses	239.32	268.19	282.59	278.83	284.64
General Farm Overhead	41.00	38.03	53.59	54.13	55.16
Taxes and Insurance	18.85	18.96	16.44	18.68	19.55
Capital Replacement	39.27	43.49	46.87	49.75	51.89
Allocated Returns to Owned Inputs:					
Return to Operating Capital ²	8.51	11.23	9.44	7.27	8.56
Return to Other Nonland Capital ³	13.48	15.03	16.19	17.03	17.56
Net Land Rent ⁴	101.05	150.95	101.71	125.29	111.54
Labor (Paid and Unpaid) ⁵	30.92	31.35	33.13	32.89	34.98
Total, Economic Costs	492.82	577.23	559.96	583.87	583.88
Residual Returns to Management and Risk ⁶	204.32	94.64	-70.62	-1.72	-49.02
Total, Returns to Owned Inputs ⁷	358.19	303.20	89.85	180.76	123.62
Harvest-Period Price (Dollar/Cwt.)	10.90	9.85	7.21	8.32	7.63
Yield (Cwt./Planted Acre)	63.95	68.21	67.87	69.97	70.10

A: Landlord/Tenant Operation

B: Full Ownership Operation

Notes: 1/ Sum of operator and landlord expenses. 2/ Variable expense items multiplied by part of year used and the 6-month U.S. Treasury Bill rate. 3/ Value of machinery and equipment multiplied by long-run real rate of return to production assets in farm sector. 4/ Of total acres rented, percentage of cash- and share-rented acres multiplied by the average cash and share rent. 5/ Hired labor (a cash expense) and unpaid labor could not be separately identified given available survey data. 6/ Calculated by subtracting total economic (full ownership) costs from total cash receipts. 7/ Sum of allocated and residual returns.

Source: U.S. Department of Agriculture, Economic Research Service, Economic Indicators of the Farm Sector: Costs of Production, Publication #'s EC1FS 2-3 (1982), Dec. 1983; EC1FS 3-1 (1983), July 1984; ED1FS 4-1 (1984), Sept. 1985, Tables 36.

included, these farmers realized negative net returns in the years 1982/83 through 1984/85.

Hence, given both the difficulties faced by the California rice industry, plus the low (even negative) net returns faced by individual rice farmers, the incentives to identify alternate crops which show promising net returns became a priority for these growers. Since the land was created for paddy production, wild rice became a good choice.

Wild Rice as an Alternative in Other California Production Regions

Wild rice was first introduced to northeastern California in 1982. Two, 30 acre fields were spring planted and approximately 1,000 unprocessed pounds were harvested per acre. The following season a volunteer crop from the 1982 planting yielded about 800 pounds per acre, and wild rice became established as an alternative crop to the traditional irrigated pasture and hay crops. Current yields are running between 900 to 1,100 pounds per acre, slightly below the California average of 1,250 pounds. Using primarily river bottom land which is often flooded by mountain rivers for some portion of a short growing season, farmers have found wild rice a profitable alternative to livestock and hay production. The latter enterprises have been unprofitable in the 1980s. Table 8 shows what has happened to these markets since wild rice first appeared in Shasta and Modoc counties. With the stagnation in beef demand during the 1980s, beef prices have fallen by 27 percent for calves, 21 percent for beef cows, and 12 percent for steers and heifers. Hay prices have declined less, averaging only an 8 percent decline over the period. Unfortunately, the relatively lower quality of hay produced in this region demand prices of only \$55 to \$60

Table 8. Average Beef and Hay Prices Paid to
California Ranchers, 1979/80 - 1984/85.

Marketing Year	Beef Calves ----- Dollars	Beef Cows ----- per CWT	Beef Steers/Heifers ----- Dollars	Hay \$/Ton
1979/80	76.70	49.80	69.10	95.00
1980/81	71.60	46.20	67.50	76.00
1981/82	60.20	42.20	63.40	86.50
1982/83	55.70	39.70	61.10	90.50
1983/84	57.00	34.30	59.80	83.00
1984/85	56.30	39.40	61.00	87.00

Source: California, Department of Food and Agriculture, Crop and Livestock Reporting Service, Field Crop Statistics, 1980 to 1984, July 1984. Table 14. p.23.; also Livestock Statistics, editions for 1980 through 1984.

per ton, as compared to a California average of about \$90 per ton. This reduction often forces negative returns to farmers from irrigated pasture and haying.²⁰

The length of growing season for this area of California seems comparable to Minnesota. Winters are cold and damp, causing volunteer rice the following season. With seed being a primary proportion of wild rice production costs, this is an advantage to growers.

In Mendicino and Lake counties, wild rice became an established specialty crop for the lowlands often flooded by high river and lake water levels. Over the years, local farmers have tried numerous alternative crops for this marginal land, including vegetable crops, wheat, barley, safflower, and sunflowers. Often, however, returning flood waters late in the growing season cut yields to unprofitable levels. The first acreage of wild rice appeared in Mendicino County in 1978. By 1985, some 1,100 acres were harvested.

The climatic conditions of warm days and cool nights in this region of California have been ideal for wild rice and have pushed yields to the highest levels for California, averaging about 1,500 pounds per acre. Yields as high as 2,200 pounds have been seen.

The western and the northeastern regions together represent only about 18 percent of California wild rice production. Farmers have had to make large investments of about \$600 or more per acre to dike, level, and ditch the land into suitable paddies for wild rice production. These investment costs are comparable to those in Minnesota. In the Sacramento

²⁰Cost of production analysis performed by a local farm advisor shows total income per acre for hay sales and livestock grazing at \$213.00, variable costs totaled \$130.06, and fixed costs totaled \$115.00, for a net return of -\$32.06.

Valley, the rice lands, now used for wild rice production, were developed beginning in about 1910. In many cases, these developments have long since been amortized.

THE CALIFORNIA WILD RICE PROGRAM

Sometimes certain conditions prevail in markets for fruits, vegetables, and specialty crops which lead to market failure and government involvement. Marketing orders are institutional innovations of the 1930s which provide for government involvement in these markets. Statutory authority for marketing orders rest in the Agricultural Marketing Agreement Act of 1937 and associated state legislation, the California Marketing Act of 1937. These laws have been changed little during almost a half century of operation.

Marketing orders are issued only after a favorable vote by the producers involved. A marketing order requires all handlers and producers to comply with its provisions. Hence, government involvement prevents "free riders" from spoiling farmer efforts to improve their economic situation in markets for crops covered by marketing orders.

The economic rationale for government involvement in marketing through marketing orders can be summarized as follows: 1) To correct imbalances in marketing power between handlers and producers. Imbalances in market power occur when a single large processor or handler may dominate price determination; 2) To improve market information on production and shipping for both producers and handlers; and, 3) To even out market supplies and improve producer prices.

California wild rice producers adopted by grower referendum in May, 1986, the California Wild Rice Program (CWRP) effective on June 5, 1986, under the statutory authority described above. This California marketing order establishes a seven member advisory board to the Director, California Department of Food and Agriculture (hereafter, identified as

Director). This California Wild Rice Board (CWRB) has the power to engage in such activities as research, sales promotion and market development, establishing and administrating standards and inspection, and establishment of a stablization pool. These activities are financed by a mandatory acreage assessment on all California wild rice producers as provided for in Article VII of the Program. The complete CWRP can be found in Appendix A.

Members of the CWRB are California wild rice producers, nominated by their peers farming in five wild rice districts shown in Figure 2, and appointed by the Director. Districts 2 and 3 initially will be represented by two growers each, while the remaining three districts will have one grower member each. District boundaries were established based on the 1985 crop year acreage estimates, and each appointed CWRB member represents an equivalent number of acres within their district. Provisions in the marketing order allow for an expansion of up to an eleven member board and reapportioning of districts as changes in acreage occur.

The CWRB will serve primarily as an advisor to the Director. This is especially relevant in terms of amending the marketing order or in carrying out the four primary activities of the Program. Virtually all actions of the CWRB must have approval of the Director prior to implementation.

Research

The funding of research on wild rice production, processing, handling, marketing, and utilization of wild rice is authorized under the CWRP. These research activities will likely be similar to research that

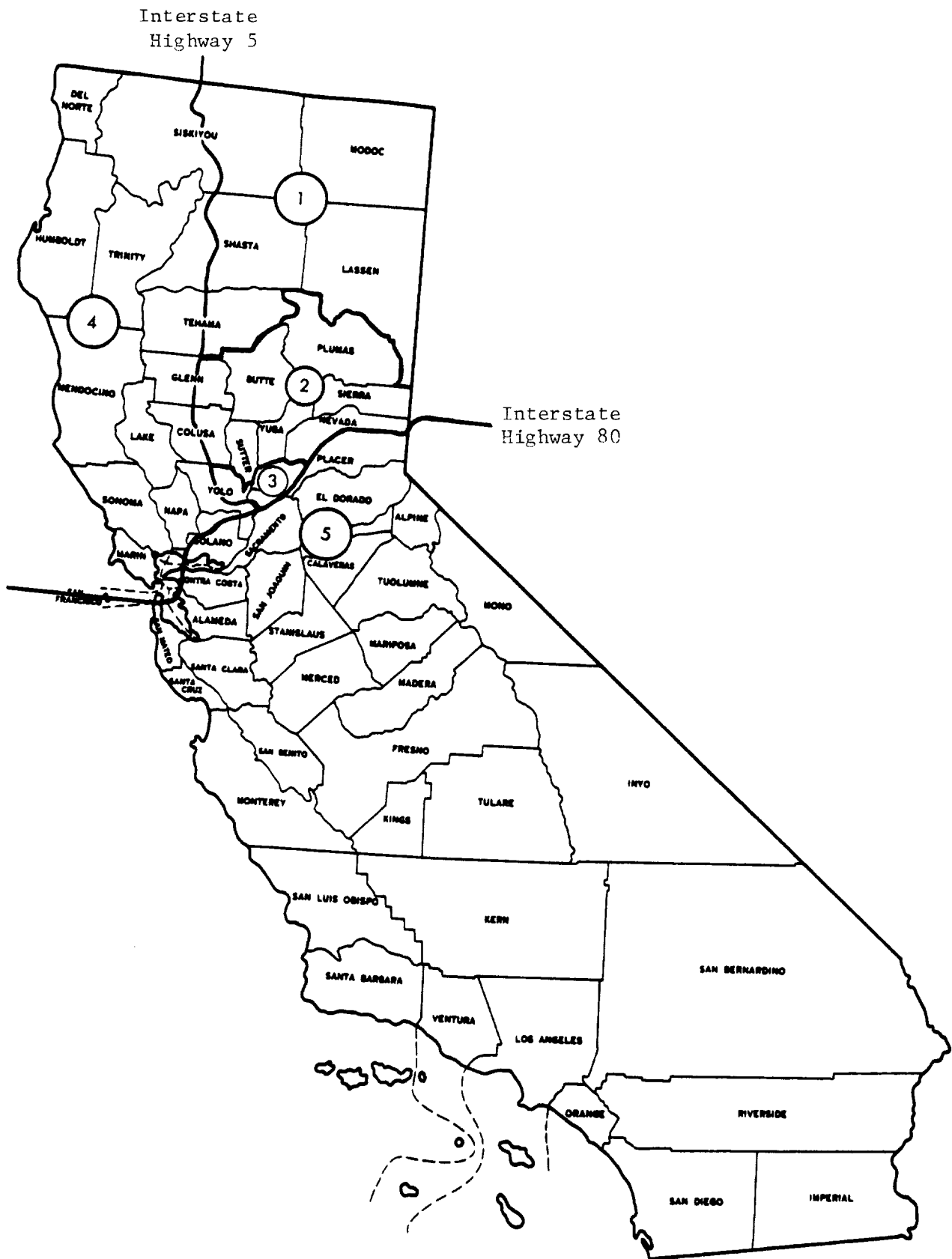


Figure 3. Wild Rice Districts -- California Wild Rice Program, 1986.

has been funded by the Minnesota Legislature at the University of Minnesota Agricultural Experiment Station since 1969.

To date, no public research on wild rice has been performed in California. Farmers, processors, and marketers have been on their own to adopt Minnesota-developed research and practices to the soils, climates, and markets unique to California. People within the industry agree that these efforts have been successful, but they have not been costless. For example, growers have had to learn by trial and error what cultural techniques will be successful in producing satisfactory wild rice yields. Processors have had to adjust their processing techniques to a grain grown under different climatic conditions. Marketers have had to quickly create new markets for rapidly expanding production. In general, this accumulated information has not been widely shared with new agents entering the industry, often resulting in repeated experimentation to determine the successful techniques, and a repeated loss of resources dedicated toward unsuccessful practices. With the advent of public research under the CWRP, repeated future losses may be avoided.

The potential gains from this public research may be reflected in the research successes funded under the Rice Research Program. Established in late 1969 as the first of two currently active California marketing orders on rice, this program is dedicated to research in production, handling, marketing, and utilization of rice. Under this program rice yields have increased from 5,700 pounds per acre in 1970 to and estimated 7,200 pounds in 1985, an increase of 26 percent.²¹ Should

²¹USDA, ERS, Rice: Background, AIB #470, Appendix Table 2, p. 35.; U. S. Department of Agriculture, Economic Research Service, Rice Outlook and Situation Report, RS-46, September, 1985, Table 14, p. 19.

similar gains be realized in the CWRP, average yields of more than 1,600 unprocessed pounds per acre may be common by the turn of the century. It seems certain that yields will increase when scientific research efforts are dedicated to improving cultivation, fertilizer, and pesticide efficiencies in wild rice production. More importantly, both existing wild rice farmers and new farmers will benefit from this work.

Sales Promotion and Market Development

A second activity authorized by the CWRP is the promotion and marketing of California wild rice. These efforts could include investigations in increasing market demand, market surveys, advertising, merchandising, special promotions, and other activities which create new and larger markets for California wild rice. These activities would likely mirror market expansion techniques commonly seen in the promotion of other farm products, such as citrus fruits, nuts, and dairy products.

The Minnesota counterpart is the Minnesota Paddy Wild Rice Promotion and Research Council based at Grand Rapids, MN. Since its formation in the mid-1970s, the council has promoted Minnesota-paddy grown wild rice. The generic promotion of a state-grown product, without reference to private brand or trade names, helps to expose wild rice to consumers and educate them in its uses.

Quality Standards and Grade Regulations

The third activity authorized under the CWRP is the establishment and enforcement of grade and quality standards for California-grown wild rice. If so recommended and approved, these standards would be applied uniformly to all California-grown wild rice and have the enforcement

power of the State of California. Under such regulations, inspections and certifications may be conducted by an established inspection agency as authorized by the CWRB, or by the Boards' own inspectors, once certified by the Director.

The establishment and regulatory enforcement of grades and standards for agricultural products is commonly seen in many marketing orders. They are often used to ensure that only wholesome production is allowed to enter markets. In addition, they may serve as a form of weak supply control to limit the amount of product that can enter the marketplace. The quality standards can be adjusted upward and downward as desired to control the marketable supply.

More importantly, grades and standards are a source of information to buyers of what sellers have to offer. Currently, grades and sizing standards for processed wild rice are used by a large proportion of processors, but these grades and standards are not uniform. This causes a difference in the sizes of processed grain available from processors under their grade labels, and lack of uniformity among wild rice processors. For example, one processor's "grade A" wild rice may not be equivalent to a second processor's "grade A" wild rice in terms of sizing, the use of broken kernels, etc. In addition, the second processor may use different terminology to classify his grades; for example, using numbers instead of letters, or using terms like "Extra Fancy" and "Fancy".

In the absence of uniformity, the market is a confusing place for buyers, especially those occasional or first-time buyers. They cannot simply place an order after checking for favorable prices because they cannot easily compare the different grades of wild rice. Instead, buyers

often substitute for this lack of uniformity by asking for samples, or by stating their own specifications for their wild rice purchases. This is costly to the buyers, both in time and money spent in sampling, writing, and testing specifications.

Only a very few processors use grades and standards for unprocessed wild rice. Usually if a processor does not detect any obvious visual or odor problems, all growers will receive the same price for unprocessed wild rice. Hence, producers do not have economic incentives in the form of higher prices to produce top quality wild rice. In fact, the current system may actually encourage production practices which reduce grain quality.

Uniform grades and standards for wild rice would increase marketing efficiency. The new California Wild Rice Board has an excellent opportunity to facilitate the specification and adoption of uniform grades and standards for unprocessed and processed wild rice.

The Establishment of a Stabilization Pool

The most controversial activity authorized by the CWRP is the potential establishment of a stabilization pool. In accordance with the Program provision:

"Upon a finding of the Board that the supply and demand conditions for wild rice (excluding seed rice) make it advisable to utilize a stabilization pool, the Board may recommend to the Director the quantity of wild rice (excluding seed rice) which shall be placed in the stabilization pool."²²

The Board must document and explain the economic findings that support their conclusions that excess supply (or insufficient demand) conditions

²²The California Wild Rice Program, dated June 5, 1986, pp. 7-8.

exist within the wild rice market justifying the creation of a stabilization pool. As the term implies, the CWRP authorizes the confiscation of processed wild rice from growers to be put into storage -- at grower expense -- in an aggregate amount equal to the volume necessary to prevent unacceptable price declines. This grain can be kept off the market until such time as supply and demand forces are again balanced to the satisfaction of the CWRB and the Director. The provision allows the Board to control the amount of California-grown wild rice in the market during a given marketing season (and over marketing seasons) with a goal of maintaining returns to growers within some satisfactory range. Once the stabilization pool is established, and:

"... the Board subsequently deems it desirable to modify, suspend, or terminate a stabilization pool which may have been approved by the Director, it shall submit to the Director its recommendation together with a written report containing the economic conditions, which serves as basis for said recommendation."²³

The Program places no restrictions on the eventual disposition of stabilization pool wild rice, or how long it might remain in the pool.

It is impossible to say whether this provision will ever be put into use. Stabilization pools are not common in other crops covered by California marketing orders. The past 1985/86 marketing season demonstrated a marked decline in wild rice producer prices over previous marketing seasons, giving indications that supply expansion may have exceeded the growth in demand.

How will the wild rice industry respond to a stabilization pool if one is established? Every firm in the industry will be affected to some

²³Ibid., p. 8.

degree. The economic justification for the establishment of a stabilization pool will be evaluated by all agents of the industry. Some will agree with the CWRB's evidence that a pool is required to raise producer prices, others will say that a pool is not needed at this time. But if a pool is established, the opinions of the industry become immaterial. Instead, each firm must now evaluate how the removal of wild rice from the market will affect their future economic behavior and market strategies. Firms on all marketing levels will take those actions they believe necessary to avoid economic losses and capture economic gains resulting from the pool's effect on the market.

For example, California growers may begin holding wild rice inventories -- at levels they consider affordable -- that can later be sold when a pool is established. These inventories will act as a reserve of revenues held to replace revenues lost to the pool, or used to cover the storage costs of pooled wild rice.

Marketers of California-grown wild rice will also have an economic incentive to begin holding affordable inventories as protection against the establishment of a pool containing too much wild rice. These inventories can be sold to customers whose demand cannot be satisfied in the market.

It remains unclear how the establishment of a pool will affect those growers who sign production contracts with marketers to produce wild rice. Marketers contract with growers to ensure that the amount of wild rice they need to fill the demand of their customers will be available at harvest. The establishment of a pool between the time of planting contract acreage, and delivery on the contract, may prevent the grower from fulfilling the contractual bargain. Some of the wild rice will be

diverted to the pool, and the marketer will receive wild rice short of his market requirements. The marketer will desire to reduce this potential risk by holding some inventories of wild rice to supplement these short deliveries created when the pool was established.

All wild rice producers who compete with California, and the few marketers who do not handle California-grown wild rice, will seek ways to benefit from the withholding of California wild rice from the market if a stabilization pool is established. Producers outside California will attempt to expand production and market more wild rice when pools are established to gain greater profits. They will also try to liquidate their inventories. Marketers will also try to liquidate their inventories, and also attempt to market wild rice to the customers of marketers who may be short on wild rice because wild rice is pooled and unavailable for market.

All growers will benefit from higher producer prices if the pool contains sufficient wild rice to counteract the various inventory liquidation strategies described above. If the pool's volume is greater than the sum of the amount of stocks held by the industry, and the amount of wild rice necessary to achieve the desired price increase, then wild rice demand will be excessively greater than its supply and prices will be higher than initially desired. This will result in more benefits accruing to the wild rice industry outside of California than to the California industry itself. Obviously, this condition contradicts the intent of the CWRP. On the other hand, if the pool's volume is less than the amount of stocks held by the industry, prices will not be supported by the pool. Prices will decline as the carryover stocks are sold. Therefore, the proper amount of wild rice to withhold from the pool is

the sum of the industrys' stocks, plus that amount of wild rice that will raise producer prices to the desired level.²⁴

In conclusion, only overwhelming evidence dictating the need for a stablization pool should cause a pool to be established. Any pools established on questionable evidence will jeopardize the gains that California producers have made to date, and unnecessarily disrupt the entire wild rice market. Pools established on questionable evidence may never be profitably liquidated.

The relative significance of any future declines in wild rice prices will have to be objectively and subjectively evaluated by the CWRB members. They will need to gather data on the economic variables of production, stocks, prices, and market demand that will either support the establishment of a pool or refute its need. By the language of the Program, the CWRB will decide when economic conditions within the wild rice market do not warrant a recommendation to the Director for the establishment of a stablization pool. On the other hand, the California Department of Food and Agriculture will decide when a pool is required, given that the CWRB makes a recommendation. But different levels of pressure from different sources within the industry will also play a role in influencing the decisions made by the Board and by this state agency.

²⁴This quantity will depend on the value of the price elasticity of wild rice demand.

ANALYSIS OF WILD RICE PRODUCTION COSTS IN MINNESOTA AND CALIFORNIA

Minnesota growers had a monopoly on cultivated wild rice production until 1977 when production began in California. California production has expanded rapidly and surpassed that of Minnesota in the 1985 crop year. An analysis of wild rice production costs in the two states will be useful in assessing the competition between Minnesota and California in producing wild rice.

Increased competition for Minnesota growers is evidenced by the growing amount of California wild rice that enters Minnesota for marketing. This directly competes for the first-handler markets that Minnesota growers once dominated. In the 1985 crop year, an estimated 34 percent of California-grown unprocessed wild rice came to Minnesota for processing and much of that wild rice was marketed by Minnesota-based processors. In addition, a growing number of Minnesota marketers, who traditionally have purchased Minnesota wild rice, are now going to California for their purchases. Indications are that in the 1986 crop year, an even larger share of the California production will be shipped to Minnesota for processing and marketing.

Wild rice crop budgets for Minnesota and California are shown in Tables 9 and 10. They are based on normal weather and growing conditions. The prices and crop inputs specified were estimated by formula and/or by recent survey information collected from the industry. The indicated yields are representative of what growers might reasonably expect under normal weather conditions, application of good farming practices, and the use of recommended agricultural technologies for wild rice. The budgets do not reflect any particular grower operation in the

Table 9. Wild Rice Budget - Minnesota

	Units	Quantity	Price \$	Total Amount \$	Cash Costs \$
Returns per Acre					
Processed Wild Rice		188 LBS	3.00	564.00	
		Field Preparation			
Disk (Light)	2	.103 HR/A	42.817	8.83	2.39
Field Cultivator	2	.115 HR/A	30.481	6.99	2.45
Drag		.063 HR/A	32.022	2.00	0.36
Subtotal				17.82 (4%)	5.20 (1%)
Nitrogen (Urea)		40.00 LBS	0.110	4.40	4.40
Phosphorus P205		20.00 LBS	0.240	4.80	4.80
Potassium K20		40.00 LBS	0.090	3.60	3.60
Fertilizer Sprdr		0.026 HR/A	54.803	1.41	0.26
Subtotal				13.94 (3%)	13.06 (4%)
		Planting Costs			
Irriga. Pumping		24.00 IN	2.00	48.00	48.00
Subtotal				48.00 (11%)	48.00 (13%)
Wild Rice Seed		40.00 LBS	2.00	80.00	80.00
Carrier		40.00 LBS	0.03	1.20	1.20
A/C Custom Seeding		1.000 ACRE	25.00	25.00	25.00
Subtotal				106.20 (23%)	106.20 (29%)
		Fertilizers			
Topdress Nitrogen		20.00 LBS	0.110	2.20	2.20
A/C Custom Applic.		1.000 ACRE	3.500	3.50	3.50
Subtotal				5.70 (1%)	5.70 (2%)
		Pest Control			
Dithane M-45	4	0.500 GL/A	9.800	19.60	19.60
Malathion	2	0.125 GL/A	25.000	6.25	6.25
A/C Custom Applic.	4	1.000 ACRE	3.250	13.00	13.00
Subtotal				38.85 (8%)	38.85 (11%)
		Misc. Costs			
Misc. Labor ¹		2.000 HR/A	5.200	10.40	10.40
Bird Control		1.000 ACRE	6.000	6.00	6.00
Dike Maint.		1.000 ACRE	10.000	10.00	10.00
Subtotal				26.40 (6%)	26.40 (7%)
		Harvest Costs			
Combine		0.500 HR/A	98.668	49.33	23.23
Field Truck		0.500 HR/A	26.893	13.45	6.58
Truck to Processing		1.000 ACRE	1.500	1.50	1.50
Processing Charges		188.0 LBS	0.450	84.60	84.60
Subtotal				151.88 (33%)	115.91 (31%)
		Other Costs			
Land Charge		\$200/Acre	0.060	12.00	--
Land Taxes		\$200/ACRE	0.009	1.80	1.80
Promotion Charge		188 LBS	0.035	6.58	6.58
Irrigation Overhead		\$48.00/A	0.132	6.34	--
Interest on Cash Costs		367.712	0.065	23.90	--
Subtotal				50.62 (11%)	8.38 (2%)
TOTAL (Year 1)				\$456.68	\$367.71

Table 9 - Continued

Budget for Year 2					
Costs, Year 1			\$456.68	\$367.71	
Changes for Year 2					
Less Seeding Costs			(106.20)	(106.20)	
Add Nitrogen Topdress	20.00 LBS	0.110	2.20	2.20	
Airboat Thinning	1.000 ACRE	6.000	6.00	6.00	
Interest / Cash Costs	269.71	0.065	(6.37)	--	
TOTAL (Year 2)			\$352.31	\$269.71	
Budget for Year 3					
Costs, Year 1			\$456.68	\$367.71	
Changes for Year 3					
Less Seeding Costs			(106.20)	(106.20)	
Add Nitrogen Topdress	20.00 LBS	0.110	2.20	2.20	
Airboat Thinning	1.000 ACRE	6.000	6.00	6.00	
Leveling/Ditching	1.000 ACRE	45.000	45.00	45.00	
Interest / Cash Costs	269.71	0.065	(3.45)	--	
TOTAL (Year 3)			\$400.23	\$314.71	
			YR 1	YR 2	YR 3
Returns Over Total Costs			\$107.32	\$211.69	\$163.77
Returns Over Cash Costs			196.29	294.29	249.29
Total Costs Per Pound Per Acre			\$ 2.43	\$ 1.87	\$ 2.13
Cash Costs Per Pound Per Acre			1.96	1.43	1.67

1. Miscellaneous Labor includes the labor of flagging for aerial applications, installing levee gates, flushing, flooding, attending water, draining fields, etc.

Table 10. Wild Rice Budget - California

	Units	Quantity	Price \$	Total Amount \$	Cash Costs \$
Returns per Acre					
Processed Wild Rice		576 LBS [1,200]	2.00 [0.80]	1,152.00 [960.00] ¹	
Field Preparation					
Disk (Heavy)	2	.127 HR/A	109.472	13.94	4.82
Disk (Light)	2	.086 HR/A	52.517	9.02	2.40
Triplane		1.340 HR/A	81.951	10.97	3.11
Field Cultivator		.740 HR/A	46.385	3.42	1.31
Drag		.630 HR/A	32.882	2.06	0.36
Subtotal				39.41 (7%)	12.00 (3%)
Planting Costs					
Irriga. Distict Water		1.000 ACRE	26.00	26.00	26.00
Irriga. Pumping		1.000 ACRE	55.00	55.00	55.00
Subtotal				81.00 (14%)	81.00 (18%)
Wild Rice Seed		90.00 LBS	2.25	202.50	202.50
Carrier		90.00 LBS	0.05	4.50	4.50
A/C Custom Seeding		1.000 ACRE	20.00	20.00	20.00
Subtotal				227.00 (40%)	227.00 (49%)
Fertilizers					
Nitrogen (Urea)		70.00 LBS	0.110	7.70	7.70
Ammonium Phosphate		125.00 LBS	0.135	16.88	16.88
Zinc Sulfate		20.00 LBS	0.300	6.00	6.00
A/C Custom Applic.	2	1.000 ACRE	4.000	8.00	8.00
Subtotal				38.58 (6%)	38.58 (8%)
Pest Control					
Roundup		1.000 PT/A	10.000	10.00	10.00
Malathion		0.125 GL/A	25.000	3.13	3.13
Copper Sulfate		20.00 LBS	0.800	16.00	16.00
A/C Custom Applic.	2	1.000 ACRE	5.000	10.00	10.00
Subtotal				39.13 (7%)	39.13 (8%)
Misc. Costs					
Misc. Labor ²		2.000 HR/A	6.000	12.00	12.00
Bird Control		1.000 ACRE	10.000	10.00	10.00
Subtotal				22.00 (4%)	22.00 (5%)
Harvest Costs					
Combine		0.500 HR/A	99.223	49.61	23.23
Field Truck		0.500 HR/A	27.693	13.85	6.58
Truck to Processing		1.000 ACRE	5.000	5.00	5.00
Subtotal				68.46 (12%)	34.81 (7%)
Other Costs					
Land Charge		\$180/Acre	0.060	10.80	--
Land Taxes		\$180/ACRE	0.004	0.72	0.72
Promotion Charge		1.00 ACRE	7.000	7.00	7.00
Irrigation Overhead		\$55.00/A	0.132	7.26	--
Interest on Cash Costs		462.236	0.065	30.05	--
Subtotal				55.83 (10%)	7.72 (2%)
TOTAL				\$571.39	\$462.24

Table 10 - Continued

Returns Over Total Costs	\$580.61	[\$388.61] ¹
Returns Over Cash Costs	689.76	[497.76] ¹
Total Costs Per Pound Per Acre	\$1.47	[\$0.48] ¹
Cash Costs Per Pound Per Acre	0.99	[0.39] ¹

1. Bracketed values represent returns and costs on an unprocessed basis.

2. Miscellaneous Labor includes the labor of flagging for aerial applications, cleaning field ditches, installing levee gates, flushing, flooding, attending water, draining fields, etc.

wild rice industry, and they are not presented as a standard to be met, maintained, or exceeded.²⁵

A comparison of these two crop budgets show the advantageous position of California growers. While cash production costs in California range between \$95 to \$192 per acre higher than in Minnesota, and typical wild rice producer prices can be about \$1.00 per pound less than in Minnesota, these disadvantages are offset by a nearly three-fold higher yield and a greater yield of processed wild rice per pound of unprocessed wild rice in California. Therefore, returns over cash costs on a processed basis in California amount to nearly \$400 greater per acre (\$689.76 for California as compare to \$294.29 for Minnesota) than (second year) net returns for Minnesota.²⁶ This advantage may be best appreciated when comparing the total cost of producing a pound of wild rice. For California, this cost is \$1.47 per processed pound and \$2.43 (year 1), \$1.87 (year 2), and \$2.13 (year 3) for Minnesota.

Returns from Wild Rice Production

Yields and producer prices differ markedly between Minnesota and

²⁵The data used to guide the construction of these budgets were collected from wild rice growers in the Sacramento Valley of California and in the Aitkin/Grand Rapids area of Minnesota.

Additional parameters used in budget calculations include: intermediate term interest rate of 12.5 percent; interest rate on operating capital of 13 percent; insurance and tax rates (except where noted) of 7.5 percent; price of diesel fuel of \$1.00; wage rates for skilled labor at \$8.50 for Minnesota and \$9.00 for California, for unskilled labor at \$5.20 for Minnesota and \$6.00 for California (all wage rates include 30 percent for benefits); and a discount on list prices of 15 percent. Returns in processing were calculated at 40 percent for Minnesota and 48 percent for California.

²⁶This differential falls to \$368.92 for returns over total costs (cash costs + economic costs). For returns paid on an unprocessed basis in California and on a processed basis in Minnesota, California returns over cash production costs exceed Minnesotas' by \$203.47 per acre.

California. Over the ten years since substantial production began, California growers have increased yields to almost three times Minnesota yields.²⁷ Three primary reasons account for this striking differential. First, the dry California climate prevents the development of yield-reducing fungi, particularly the brown spot fungus, that have retarded the increase in Minnesota yields since the early years of cultivated production.²⁸ The climate also plays a primary role in the uniform maturity of the California crop, resulting in a typical yield rate of 48 percent of processed wild rice from unprocessed wild rice compared to the typical 40 percent yield rate for Minnesota. Second, California growers have an ability to plant dense stands of wild rice to increase yield. This is related to the climatic advantage, in that denser stands in Minnesota are conducive to greater incidence of fungal disease.

Third, California growers can annually select wild rice varieties with the highest potential yields. In the Sacramento Valley, each field must be seeded annually. Although this is a primary cost input for California growers, contributing 49 percent of total cash costs as shown in Table 10, this cost is overcome by the ability to select the best yielding variety available each growing season. In Minnesota, wild rice fields will reseed themselves after the first year. As much as 1,000 pounds of seed per acre can shatter to the ground prior to harvest, cutting significantly into returns and creating dense stands in the

²⁷Calculated yield estimates for California in the 1982 crop year were nearly 700 unprocessed pounds per acre. By the 1985 crop year, these had grown by about 73 percent to a calculated average of 1,250 unprocessed pounds per acre.

²⁸See E. A. Oelke et al., Wild Rice Production in Minnesota, pp. 27-28 for a list of diseases that infest Minnesota-grown wild rice.

subsequent growing seasons.²⁹ These dense plant populations must be thinned to achieve optimal yields. However, an even greater consequence of natural reseeding is the ever-increasing proportion of shatter-resistant plants which carry secondary genetic traits for shattering. The seed that falls to the ground to provide the shatter-resistant plants for the following season's growth may largely be seed with these secondary genetic traits; that is, an tendency of the plant to hold a seed less tightly. Therefore, over time volunteer fields become largely populated with plants with this secondary characteristic, further cutting into yields and returns.³⁰ When these yield reductions are detected, commonly in the fifth or sixth year, Minnesota growers fallow the field, attempting to kill the volunteer crop. But no economically efficient method has been developed to quickly kill these volunteer seeds. Current methods take a minimum of one crop year, involving both cultivation and flooding to kill wild rice seedlings. But wild rice seed has been known to lie dormant for many years, and therefore, volunteer seedlings from old varieties can be expected to reappear years later.³¹ Minnesota growers compensate for these difficulties by farming additional acreage so that each crop year, a portion of acreage can be fallowed and converted to new varieties, and yet, keep the desired amount of acreage in production.

Producer price is the second component of grower returns. In general, Minnesota growers receive higher prices for processed wild rice

²⁹Ibid., p. 17.

³⁰See University of Minnesota, Agricultural Experiment Station, Minnesota Wild Rice Research 1985, Miscellaneous Publication 36, January 20, 1986, pp. 14-23 for a discussion of this problem.

³¹E. A. Oelke et al., Wild Rice Production in Minnesota, p. 32.

than California growers. In the 1985/86 marketing year, Minnesota growers received prices ranging from \$2.45 to \$3.10 per processed pound while California growers received prices ranging from \$2.00 to \$2.75 per processed pound. This price differential is partially attributed to transportation costs since much unprocessed California wild rice is purchased by Minnesota marketers and transported back to Minnesota for processing.

Wild Rice Production Costs³²

For both California wild rice growers and first-year Minnesota producers, the most costly input is seed. Seed prices have remained relatively constant in recent years. In both states, seed has sold for about \$2.00 per pound, an indication of a stable seed market. Since the major acreage expansion erupted in California, the state's seed price has increased slightly, with prices as high as \$3.00 being reported. Minnesota seed cannot immediately adapt to California's climate to produce good yields, and therefore, two generally distinct seed markets exist.

Planting costs hold a significant share of both cash and total costs for each state (Tables 9 and 10). These costs are higher in California because seeding rates are more than double those of Minnesota. Minnesota growers must limit plant density to help prevent plant disease infestations. The costs of seed application in the two states do not

³²A comparison of each corresponding line item of the budgets will reveal a difference in cost for growers in each state. Some of these are beyond the control of the growers, i.e. land tax rates. Other differences are not significant, or do not comprise a large percentage of grower costs. These types of costs will not be discussed.

differ markedly.

Differences in production costs between the two states also appear in the categories of irrigation, pest control, miscellaneous costs of production, and in the payment of processing fees.

The costs of irrigation are usually slightly higher in California. However, growers may not need to purchase irrigation water from local water districts. If sufficient spring-runoff is available in local channels to adequately meet the relatively high water demand of wild rice, as occurred for many growers in the 1986 crop year, this cost may be avoided.

California wild rice production has not yet faced a significant yield-reducing plant disease, insect, or weed pest, in sharp contrast to Minnesotas' problems with fungi, and various water weeds. Although some chemicals are available to California growers to combat pests, problems with weeds are commonly controlled with high water levels, and problems with insects are often avoided by early plantings. For both states, the wild rice plant's intolerance to herbicides have made chemical weed control a limited solution to low yields.

Problems with blackbirds may be more serious in California than in Minnesota, causing growers to invest more to prevent crop damage and yield reductions from these pests. Consequently, what California growers do not spend on herbicides and insecticides, they spend on bird-control measures.

These greater bird problems in California may be largely due to the lack of alternate food sources for blackbirds at the time wild rice matures. Also, California wild rice fields are scattered geographically, thus concentrating birds in the fields near their nest sites. In

contrast, Minnesotas' natural wild rice stands offer alternate feeding sites for blackbirds, and Minnesota paddies are geographically concentrated so bird populations are more likely to be spread widely among the fields.

For several reasons, Minnesota growers face higher field maintenance costs than do Californians. Californias' heavier mineral soils making up field dikes and ditches hold up longer because these dikes are smaller in size, less porous, less erodable, and require less maintenance than Minnesotas' lighter-weight peat soils which often float during spring flooding. Dikes surrounding Minnesota paddies must be higher and thicker to compensate for the porous and erodable nature of peat soils.³³ This makes it difficult and expensive to maintain water-tight integrity in Minnesota paddies. Secondly, the harsh Minnesota winters and deeply penetrating frosts can cause damage to both dikes and ditches. Third, California wild rice paddies often abut rice acreage, forming large expanses of rice and wild rice fields. Rice and wild rice growers sharing common dikes and ditches also share the costs of labor and equipment to keep them well maintained. This reduces costs to individual growers. In contrast, Minnesota paddies are often isolated from each other, so individual growers must bear the full cost of dike and ditch maintainance.

Fourth, most paddies in Minnesota are owned by growers who also developed them. Hence, these growers bear the full cost of paddy development as well as current upkeep. In California, most of the existing rice acreage, now used as wild rice acreage, was developed by

³³E.A. Oelke et al., Wild Rice Production in Minnesota, pp. 10-11.

past generations of rice farmers, and the costs of development were not borne by the current generation of California growers.

Minnesota growers have traditionally paid processors a fee for processing their grain, commonly 15 to 18 cents per unprocessed pound, 45 to 50 cents per processed pound. These fees are charged no matter whether the processor purchases the wild rice, or the grower sells the grain elsewhere.

In contrast, these fees are not explicitly charged to California growers. Both processed and unprocessed wild rice priced contracts are available to California growers. But, in no known cases are processing fees paid directly by growers.³⁴ Processor and marketers purchasing on a processed-based price seemingly absorb the cost of processing. However, this is not true. Some portion of the processing fee is implicitly paid by California growers through lower prices. The balance of the processing fee is paid by consumers through higher prices.³⁵

³⁴The one exception is the few California growers who market wild rice.

³⁵The relative proportion of the processing fee shared by consumers and California growers will depend on the relative values of the price elasticities of demand and supply in the wild rice market.

As a related issue, California growers have a choice between production contracts, paid on either an unprocessed or processed basis. Given that these contracts are identical in all other respects, growers should compare the ratio of the unprocessed to processed price with the expected processing return percentage for their wild rice. If this ratio of prices is less than the expected processing return percentage, then the growers will benefit by choosing the contract paid a processed basis. On the other hand, if the ratio of prices is greater than the expected processing return percentage, then the contract paying on an unprocessed basis should be chosen.

THE EFFECTS OF CALIFORNIA EXPANSION ON THE WILD RICE INDUSTRY

It was only a few years ago that Minnesota enjoyed a monopoly position in the production of cultivated wild rice. Canadian production expansion, particularly in Saskatchewan, seemed to be the greatest threat to this monopoly position. There was much concern within the Minnesota industry that subsidized production by Canadian federal and provincial governments might cause the great potential of Canadian production to be realized. Consequently, there was talk of the possible need for import quotas or taxes on Canadian wild rice entering the U.S. market.

Very little discussion centered on the production potential in California, where production was just becoming established. California production of wild rice in the late 1970s and early 1980s seemed more a curiosity than a threat to be taken seriously. This has changed dramatically in the last few years.

The 1985 crop year marked the first year when California production of wild rice exceeded that of Minnesota. Early estimates for the 1986 crop year indicate that about one hundred California growers will harvest about 20,000 acres of wild rice, producing an estimated 24 million unprocessed pounds. Approximately one-tenth of this production will be retained for seed. The remaining 90 percent will be processed with up to one-half of this volume processed outside of California. Along with non-California production -- an average to good-size lake crop of some 2 million unprocessed pounds, and Minnesota cultivators having a successful harvest of some 15 million unprocessed pounds -- the wild rice industry may produce for market an estimated 38.6 million unprocessed pounds (17.268 million processed pounds) in the 1986/87 marketing year.

The fact that a large portion of wild rice processors and other first handler-marketers have operations based in Minnesota has put great pressure on Minnesota growers. California growers can produce wild rice at a lower cost per pound, and producer prices are lower. For marketers to stay competitive, they are forced to buy large amounts of California-grown wild rice. California-grown wild rice is harvested, processed, and sold to first handlers while the Minnesota crop is still in the field. Hence, unless major reductions in Minnesota production costs and/or major increases in yields occur relatively quickly, some Minnesota growers may soon find themselves unable to profitably produce wild rice at prices that can compete with California.

The Advantages of Producing Wild Rice in California

Currently, California growers produce wild rice at an estimated total cost of about \$1.50 per processed pound, and about \$0.50 lower if only cash costs are covered. On an unprocessed basis, the total cost of producing a pound is about \$0.50, and \$0.10 lower if only cash costs are covered. For Minnesota, the total cost is about \$1.90 to \$2.45 per processed pound, and about \$1.45 to \$1.95 if only cash costs are considered.³⁶

What is striking about this large cost differential is that the costs in Minnesota are based on sixteen years of public-funded agricultural research in wild rice production. But comparable production research has not yet begun in California. This states' lower per-pound production

³⁶Minnesota costs will vary between first, second, and third (and beyond) years of production (Table 9). Economic theory says that growers will continue to produce wild rice only so long as the cash (variable) costs are covered.

costs have been achieved using privately funded research, grower experimentation, adoption of Minnesota research, and the guidance of Minnesota wild rice producers, processors, and marketers. It seems certain that these costs can be lowered still further once advances in production technology occur as a result of research under the California Wild Rice Program (CWRP).

Profits for California growers can also be raised by increasing revenues. Since the competitive wild rice market will determine the price component of revenues, growers will be interested in CWRP-funded research that increase yields, the second component of revenues. Even before this research has begun, average California yields already exceed Minnesotas' by as much as three-fold. It is likely that California yields will rise even higher in response to agricultural production research.

The Disadvantages of Producing Wild Rice in California

California growers have many current advantages in wild rice production. But they also have some potential problems. Large increases in past production have been absorbed by the wild rice market without significant price declines. However, the record production growth in the 1985 crop year has signaled a possible end to this trend. The effect of 1986 production increases on price levels will be decided in the remaining months of the 1986/87 marketing year. Profits can quickly turn to losses if prices collapse. Many large capital investments and developments under construction in the California wild rice industry are likely contingent on the continuation of current prices. Currently, there are three operating processing facilities in California. A fourth

may be on line to process the 1986 harvest. Construction is underway on at least one other new plant and plans to build as many as four additional plants are being developed.

Between seventy-five and ninety California farmers grew wild rice in the 1985 crop year, and an estimated one hundred produced the 1986 crop. Most of these growers produced wild rice under contracts signed with processors and marketers, but an estimated 25 percent of 1986 crop year production was grown without contracts. These growers harvest their crops and attempt to market their grain, as some Minnesota growers routinely do each year. But the speculating California grower has not developed a long-term processor relationship like Minnesota growers have. It remains to be seen whether these California growers can find a market for this wild rice at prices that will yield satisfactory returns.

A second disadvantage that California growers face is an increasing level of environmental pressure. This state is an example of what happens when people and agriculture have conflicts. Probably no other state has more restrictions and regulatory protections controlling the effects of agriculture on the environment.

California is the most populous state in the U. S. and also has more irrigated acreage than any other state. In recent years, farmers of the Sacramento Valley have been tagged by environmentalists with the responsibility for water pollution from rice production and air pollution from straw burning. Farmers have been involved with local issues of mosquito control on the thousands of irrigated rice and wild rice acres surrounding metropolitan Sacramento, California. Farmer attempts to control blackbird problems have been met with environmental concerns to protect the birds and other wildlife. These environmental pressures will

continue to affect California agriculture, placing barriers to growth of the wild rice industry.

To date, California wild rice production has escaped the yield-reducing effects of pests. Agricultural experience dictates that it is only a matter of time before such problems will occur. There is always the threat of the introduction of new pests into California that will attack wild rice.

Other problems also occur in California wild rice production. As in Minnesota, hundreds of pounds of grain on every acre are lost prior to harvest due to shattering. The management of nitrogen application remains a mystery, and the factors that influence stand establishment are not well understood.

Problems also occur in marketing. California growers often complain of the slow payment schedules used by processors and marketers. Some schedules have been known to extend into the following crop year, or beyond. Secondly, in the early years of production, processors and marketers found it difficult to convince California farmers to produce wild rice. Production contracts were developed to ensure an adequate supply of wild rice would be available for established processor customers. In the 1986 crop year, it has been difficult for processors and marketers to convince growers not to grow wild rice. Seed has become widely available to California farmers willing to pay the higher price that this demand creates. Processors and first handler- marketers were also slow to contract for the 1986 crop. No one wanted to be the first to establish a price that later on would fall. Buyers ended contracting this season when prices fell to about 65 cents per unprocessed pound. Some processors and marketers did not contract for any acreage or

poundage in the early stages of the 1986 crop year, and others reduced their normal contract volumes. They preferred to sell their excess 1985/86 inventories and purchase additional wild rice as necessary on the spot market from producers who grew speculative acres. The 1986/87 market price for California wild rice will likely be the lowest ever experienced in the state.

The lack of sufficient processing capacity in California will continue to be a problem for the California wild rice industry in the 1986/87 marketing year, especially for growers who do not have production contracts. If California processing resources are unavailable, paying to ship wild rice to Minnesota processing plants will further cut into the reduced profits these speculative growers can expect.

Lastly, California growers should be excited about the possible benefits of the California Wild Rice Program. They should also be cautious not to overestimate these benefits, and underestimate the costs of this wild rice marketing order.

Implications for the Minnesota Wild Rice Industry

Developments in the California wild rice industry impact heavily on the Minnesota segment of the industry. Minnesota producers will have to increase yields and reduce production costs if they are to remain competitive.

Minnesota growers have made steady progress in increasing their production through increased acreage and increased yields. In past years, grower interest has been concentrated on developing additional acreage for production. Now, many growers are taking a renewed interest in increasing the productive efficiency of their current acreage. This

can be accomplished through the techniques of lazer leveling to increase production, tiling to make fields dry faster in the fall, reconstructing of dikes and ditches to hold and deliver water more efficiently, and combining smaller paddies into larger paddies to take advantage of economies of scale and size.³⁷

Other improvements that will improve the competitive position of the Minnesota wild rice industry are beyond the control of the individual grower. These include:

1) The development of an economically feasible method to efficiently kill volunteer seeds. This will give the same advantage to Minnesota growers that California growers enjoy: the ability to plant the highest yielding wild rice varieties available each year.

2) The development of higher-yielding wild rice varieties in Minnesota.

3) The labeling of the necessary pesticides needed by the Minnesota industry to control yield-reducing diseases, plants, and animals.

4) The development of wild rice plants resistant to leaf diseases. This will increase yields and reduce production costs for pest control.

5) The improvement of fertilization management techniques on organic soils in Minnesota paddies.

6) Increasing the accessibility to undeveloped lands for expanding wild rice acreage.

³⁷Certainly, a portion of this renewed interest in greater production efficiency on developed acreage is related to the shortage of sizable land acreage -- near current paddy developments -- which is readily available to growers and can be cheaply developed. Most acreage which meets these requirements is state-owned or controlled. The Minnesota industry has spent the last 12 to 18 months trying to free up this land for development.

All these activities require continued dedication of agricultural scientists to their research, and the continued cooperation of Minnesota industry members. More importantly, these activities require the financial and legislative support of both federal and state governments.

ECONOMIC INFORMATION IN THE WILD RICE INDUSTRY

Economic information serves a major function in improving market performance. Accurate information on production, prices, costs, and stocks help guide wild rice firms to proper decisions on farming, product marketing and capital investment. When these decisions are based on inaccurate, misleading, or incomplete information, they often lead to a costly misallocation of inputs, financial resources, and time. Improved economic information will improve productivity and economic efficiency in the wild rice industry.

Individual firms should focus scarce, information-gathering resources toward investments in customer development and market research where real gains over rivals will result in greater profits. Other forms of routine economic information, such as wild rice production, prices, costs, and stocks can be shared on an aggregate basis within the industry without harm to individual firms.

The California Wild Rice Program as a Source of Information

The California Wild Rice Program (CWRP), a marketing order recently adopted by California wild rice producers, will be one source of industry-wide information. As authorized by the Program, the administering board can recommend the establishment of a stabilization pool of wild rice to help relieve downward pressure on wild rice prices. Support for this recommendation requires the routine collection and analysis of data on wild rice production, prices, costs, and stocks. This basic economic information could be released to the entire industry without harm to individual firms, especially if aggregated so individuals

are not identified. Making this information available allows all firms to concentrate resources toward more appropriate investments.

The CWRP will test the wild rice industry's ability to share accurate information on these basic economic variables. A stabilization pool will be successful in holding up prices only if the pool is founded on accurate data supplied by the wild rice industry.

APPENDIX A

STATE OF CALIFORNIA
DEPARTMENT OF FOOD AND AGRICULTURE
MARKETING BRANCH

CALIFORNIA WILD RICE PROGRAM

DEPARTMENT OF FOOD AND AGRICULTURE

1220 N Street
Sacramento, CA, 95814

For Information
Call: (916) 445-5141



May 30, 1986

NOTICE OF ISSUANCE AND EFFECTIVE DATE
OF THE CALIFORNIA WILD RICE PROGRAM

TO ALL PRODUCERS OF CALIFORNIA WILD RICE, PLEASE TAKE NOTICE AS
FOLLOWS:

1. That the Director of the Department of Food and Agriculture, acting pursuant to the provisions of Chapter 1 of Part 2, Division 21 of the Food and Agricultural Code, has issued the California Wild Rice Program;
2. That said Program will become effective as of 12:01 a.m., Pacific Daylight Saving Time, Thursday, June 5, 1986;
3. That this Notice of Issuance and Effective Date of said Program is posted in compliance with the provisions of said Food and Agricultural Code; and
4. That a copy of the Order making effective the California Wild Rice Program is on file in the office of the Marketing Branch, Department of Food and Agriculture, and is available on request.

Clare Berryhill
Director of Food and Agriculture

Date May 30, 1986

By Richard E. Gassman
Richard E. Gassman, Chief
Marketing Branch

DEPARTMENT OF FOOD AND AGRICULTURE

1220 N Street
Sacramento, CA 95814

May 30, 1986



CALIFORNIA WILD RICE PROGRAM APPROVED

TO THE WILD RICE PRODUCER ADDRESSED

Wild Rice producers have approved the California Wild Rice Program in the recently completed referendum.

Almost 58 percent of all wild rice producers participated in the referendum. Over 68 percent of the producers voting, representing over 68 percent of the volume voted, were in favor of the Program, which meets the requirements of the California Marketing Act for approval by producers.

Enclosed is a copy of the Notice of Issuance and Effective Date of the California Wild Rice Program. The Program will become effective on June 5, 1986. Copies of the Order making the Program effective are on file in the Marketing Branch and are available upon request. Also on file and available are copies of the California Wild Rice Program. The Program as made effective is the same as was mailed to producers for the referendum vote.

Now that the Program has been approved and made effective, the California Wild Rice Board will be appointed. The Board will make recommendations to the Director of Food and Agriculture with respect to Program activities.

If you have questions regarding any of these matters, please call Glenn E. Yost or the undersigned at the Marketing Branch.

Sincerely,

Richard E. Cassman

Richard E. Cassman, Chief
Marketing Branch
(916) 445-5141

Enclosures

CALIFORNIA WILD RICE PROGRAM

A R T I C L E I

DEFINITIONS

Section A. DEFINITION OF TERMS. As used in this Program, the following terms shall have the following meanings:

1. "Act" means the California Marketing Act of 1937, being Chapter 1, Part 2, Division 21 of the Agricultural Code, as amended, or as the same may be hereafter amended.
2. "Director" means the Director of Food and Agriculture of the State of California.
3. "California Wild Rice Program" or "Program" means, unless the context otherwise indicates, this Program which is issued by the Director pursuant to the provisions of the Act.
4. "California Wild Rice Board", "Advisory Board", and "Board" are synonymous and mean the Board created pursuant to Article II of this Program.
5. "Person" means an individual, partnership, firm, corporation, association, subsidiary, affiliate, or other business unit.
6. "Wild Rice", for the purposes of this Program, means all marketable wild rice (*Zizania palustris*) produced within the State of California for milling, other commercial, or seed purposes.
7. "Producer" means any person engaged within this State in the business of producing, or causing to be produced, wild rice, and includes only those persons who receive payment for a share in a wild rice crop.
8. "Hundredweight" or "Cwt" are synonymous and mean one hundred (100) pounds avoirdupois, excluding tare.
9. "Sell" means to offer for sale, expose for sale, have in possession for sale, exchange, barter, or trade, wild rice.
10. "Ship" means to transport, or cause to be transported by any means whatsoever, wild rice.
11. "Market", unless the context indicates otherwise, shall be synonymous with the phrase "to market", and shall mean to sell, ship, distribute, or otherwise handle.
12. "Miller" means any person engaged within this State in the operation of milling, or receiving for milling, wild rice.

13. "Handle" or "Handling" means to be engaged in the business of distributing or processing wild rice and may include the receiving, assembling, cleaning, grading, milling, storing, or otherwise preparing for market and marketing of wild rice.

14. "Handler" means to be engaged in the business of handling.

15. "Pound" or "lb." are synonymous and mean 16 ounces avoirdupois.

16. "Fiscal Year" or "Marketing Season" are synonymous and mean the period beginning June 1 of any year and continuing through May 31 of the following year, provided that for the purposes of collecting information pursuant to Section 58775 of the Act, the preceding marketing season shall begin June 1, 1985, and continue through January 31, 1986.

A R T I C L E II

CALIFORNIA WILD RICE BOARD

Section A. ESTABLISHMENT, MEMBERSHIP, AND TERM OF OFFICE.

1. A Board to be known as the California Wild Rice Board is hereby established and shall consist of seven (7) members to assist the Director in the administration of this Program. The Board shall be composed of producers, as herein defined. The Board may recommend to the Director the appointment of a member to represent the general public.

2. There shall be an alternate member for each member of the Board. Each respective alternate shall be selected in the same manner and for the same term as the member to whom he is alternate member.

3. Members and alternate members shall be appointed by the Director from nominations received for that purpose.

4. The regular term of office of the members shall be three (3) years beginning April 1 and ending March 31 of the applicable marketing season. However, to provide for a staggered term of office for appointees to the initial Board: Two (2) members shall serve a one year term; two (2) members shall serve a two-year term; and three (3) members shall serve a three-year term. The terms of office of the members of the initial Board shall be determined by lot. No individual, including members or alternate members of the Board, shall serve more than two consecutive terms of office; provided, appointment to fill out less than one year of a term of office shall not be included in determining two consecutive terms of office.

5. Representation on the Board shall be by districts as follows:

(a) District 1 shall be composed of all that area of the State of California east of Interstate Highway 5 and north of the northerly boundaries of Glenn County, Butte County and Plumas County. District 1 shall have one (1) member and one (1) alternate on the Board.

(b) District 2 shall be composed of all that portion of Glenn County and Colusa County lying east of Interstate Highway 5, all that portion of Sutter County north and west of the Feather River, all of Butte County, Yuba County, Plumas County, and Nevada County. District 2 shall have two (2) members and two (2) alternates on the Board.

(c) District 3 shall be composed of those portions of Placer County and Sacramento County north of Interstate Highway 80, those portions of Yolo County north of Interstate Highway 80 and east of Interstate Highway 5, and that portion of Sutter County not included in District 2. District 3 shall have two (2) members and two (2) alternates on the Board.

(d) District 4 shall be composed of all that portion of the State of California lying west of Interstate Highway 5 and north of Interstate 80. District 4 shall have one (1) member and one (1) alternate on the Board.

(e) District 5 shall be composed of all that portion of the State of California lying south of Interstate Highway 80. District 5 shall have one (1) member and one (1) alternate on the Board.

6. At the end of the second fiscal year of this Program and at the end of each two fiscal years thereafter, the Board shall re-evaluate the representation on the Board by districts. If at that time the Board determines membership on the Board is not representative as to the number of acres of wild rice produced within the individual districts, the Board shall reapportion the districts and/or adjust the membership on the Board to provide as near as possible representation on the Board in accordance with the number of acres of wild rice produced in each district. Such reapportionment and/or adjustment of the membership on the Board shall take effect at the beginning of the fiscal year immediately following the Board action. If the Board adjusts the number of members on the Board, they shall not increase the size of the Board beyond eleven members and eleven alternates. This action shall be deemed to be a minor amendment to this Program.

Section B. NOMINATION OF MEMBERS OF BOARD.

1. Nominations for the initial Board shall be made at the public hearing for the purpose of formulating this Program.

2. For the purpose of obtaining nominations for subsequent Boards, the Director shall cause a meeting or meetings of producers to be held in wild rice producing areas in California. Such nomination meeting or meetings shall be held annually not later than March 15.

3. Insofar as practicable, producers shall nominate not less than two (2) producers eligible to serve as a member of the Board for each member position available. The purpose of two (2) or more nominees shall be to provide at least one (1) nominee for alternate member, and at least one (1) nominee to hold in reserve (reserve alternate).

4. The Board shall recommend nomination procedures for Boards subsequent to the initial Board.

Section C. SELECTION AND APPOINTMENT OF MEMBERS OF BOARD. In appointing the members and alternate members of the initial Board, the Director shall select seven

(7) members and seven (7) alternate members from the persons nominated at the public hearing held for the purpose of formulating this Program and such other nominations as may be received. In appointing the members and alternate members of subsequent Boards, the Director shall select the number of members and alternate members whose terms are then expiring from nominees obtained from nomination procedures held pursuant to this Program for that purpose. Appointments by the Director to the Board shall be consistent with the provisions of Sections A and B of this Article II. Insofar as practicable, the Director shall include in his appointments to the Board producers from the various geographical producing areas who are otherwise broadly representative of the wild rice industry of California.

Section D. FAILURE TO NOMINATE. In the event nominations are not made pursuant to this Article II and within the time specified herein, the Director may select members and alternate members without regard to nominations, but who otherwise meet the requirements for members and alternate members set forth in this Article II.

Section E. QUALIFICATION. Any person appointed by the Director as a member or as an alternate for a member shall qualify by filing with the Director a written acceptance and such other documents as may be required.

Section F. ALTERNATE MEMBERS. An alternate member of the Board shall, in the absence of the member for whom he is alternate, sit in the place and stead of such member at any meeting of the Board and shall have all the powers, duties, and privileges of the member while attending any such meeting. In the event of the death, removal, resignation, or disqualification of the member, his alternate shall act in his place and stead until a successor to such member is selected and has qualified.

Section G. VACANCIES. The Director shall fill any vacancies occasioned by the removal, death, resignation, or disqualification of any member or alternate member of the California Wild Rice Board. In making such selection, the Director may take into consideration any reserve nominees and nominations made by the remaining members of the Board.

Section H. ORGANIZATION.

1. The California Wild Rice Board shall not perform any of its duties nor exercise any of the powers herein granted when more than three (3) vacancies in its membership exist.

2. Four (4) members of the Board shall constitute a quorum. Any recommendation of the Board to the Director shall require an affirmative vote of a majority of the members or alternates acting in the place and stead of members.

Section I. EX-OFFICIO MEMBERS. Each year the Board may recommend, and the Director may approve, the participation of ex-officio members in any or all deliberations of the Board; provided, that such participants shall not be counted in determining the presence of a quorum nor may they participate in voting on matters under consideration by the Board.

Section J. COMMITTEES. The Board may recommend, and the Director may appoint, such committees as may be deemed necessary to assist the Board and the Director in performing the duties authorized pursuant to this Program.

Section K. EXPENSES. The members and alternate members of the Board, including ex-officio members, and of any committees established pursuant to Section J above, may be reimbursed for allowable expenses necessarily incurred by them in the performance of their duties and in the exercise of their powers hereunder. But no such member or alternate member shall receive a salary for the performance of such duties.

Section L. DUTIES AND POWERS OF THE BOARD. The Board shall have the following duties and powers which may be exercised subject to the approval of the Director:

1. To administer the provisions of this Program.
2. To recommend to the Director administrative rules and regulations relating to this Program.
3. To receive and report to the Director complaints of violations of this Program.
4. To recommend to the Director amendments to this Program.
5. To assist the Director in the assessment of members of the industry and in the collection of such assessments to cover expenses incurred by the Board and the Director in the administration of this Program.
6. To assist the Director in the collection of such necessary information and data as the Director or the Board may deem necessary to the proper administration of this Program and of the Act.
7. To keep minutes, books, and records which will clearly reflect all of its meetings, acts, and transactions and to provide the Director with copies of the minutes duly certified by an authorized officer of the Board. Said minutes, books, and records shall, at all times, be subject to examination by the Director or his duly authorized representatives.
8. To employ such personnel as may be deemed necessary and to fix their compensation and terms of employment.
9. The Board may negotiate contracts; provided, that no contracts with any research agency shall be approved if any member or alternate of the Board also serve as a director of the contractor.
10. The Board may receive, invest and disburse assessment funds.

Section M. LIMITATION OF LIABILITY OF MEMBERS OF THE BOARD. The members and alternate members of the California Wild Rice Board, ex-officio members, or members and alternate members of any committees hereunder duly appointed by the Director, and the employees of such Board shall not be responsible individually in any way whatsoever to any producer or any other person for errors in judgment, mistakes, or other acts, either of commission or omission, as principal, agent, person, or employee, except for their own individual acts of dishonesty or crime. No such person or employee shall be held responsible individually for any act or omission of any other member of the Board, committee, or employee. The liability of the

Board, its committees, or employees shall be several and not joint and no member or alternate member shall be liable for the default of any other member or alternate member.

A R T I C L E I I I

RESEARCH STUDIES

Section A. RESEARCH AUTHORIZATION. The California Wild Rice Board, subject to the approval of the Director, is hereby authorized to carry on or cause to be carried on, any necessary and proper research relating to the production, handling, marketing, or utilization of wild rice and to expend monies for such purposes.

A R T I C L E I V

SALES PROMOTION AND MARKET DEVELOPMENT

Section A. SALES PROMOTION AND MARKET DEVELOPMENT PLANS.

1. The Board is hereby authorized to prepare and administer subject to the approval of the Director, plans for promoting the sale of California wild rice for the purpose of maintaining existing markets and creating new and larger markets for California wild rice; provided, that any such plans so developed and conducted shall be directed toward promoting the sale of such California wild rice without reference to a particular private brand or trade name; provided, further, that such plans make no use of false or unwarranted claims on behalf of wild rice, nor disparage the quality, value, sale, or use of any other agricultural commodity.

2. In carrying out any advertising and sales promotion plan or program as provided for in Paragraph 1 of this Article, the Board, subject to the approval of the Director, may investigate any reasonable possibilities of increasing the market demands for California wild rice; assemble and disseminate factual information relating to the marketing conditions of California wild rice; make market surveys; arrange for advertising space and material; conduct dealer service and merchandising work; conduct special promotions and any other activity consistent with the Act and this Program which the Board and the Director consider appropriate in promoting and creating new and larger markets for California wild rice.

3. In order to carry out the plans and programs as prescribed in Paragraphs 1 and 2 of this Article, the Board is authorized, subject to the approval of the Director, to enter into contracts with agencies and individuals qualified to render services in formulating and conducting said plans and programs.

4. The Board with the approval of the Director may establish and regulate the permissive use of an official board brand, trade name, or label or other distinctive designation of grade, quality, or condition. The permissive use of any such official board brand, trade name, or label or other distinctive

designation of quality shall be limited to producers and handlers of the commodity that are participating in the Program and that are in compliance with its provisions and with any regulation, or rule and regulation, which is adopted under it. Any official brand or trade name which is established pursuant to this Section shall not be construed as a private brand or trade name with respect to Section 58889 of the Food and Agricultural Code.

A R T I C L E V

QUALITY STANDARDS AND GRADE REGULATIONS

Section A. RECOMMENDATIONS OF GRADE AND QUALITY STANDARDS. In carrying out the provisions of this Program and to facilitate the enforcement and administration thereof, the Board may recommend, and the Director may approve seasonal marketing regulations for grade and quality standards of wild rice as necessary. Such recommendations shall not be lower than any existing State or Federal regulations.

Section B. INSPECTION AND CERTIFICATION. During any period or periods which grade standards are in effect all wild rice shall be inspected and certified by an authorized inspection agency in accordance with inspection rules and regulations as the Board may recommend and the Director may issue.

Section C. INSPECTION AGENCY. The Board is authorized to make suitable arrangements for inspection and certification by an established and experienced inspection agency or the Board, with the approval of the Director, may employ its own inspectors. In the event the Board employs its own inspectors, such inspectors shall first be qualified by the Department of Food and Agriculture as being competent to perform such inspection service.

Section D. ADMINISTRATIVE RULES AND REGULATIONS. Administrative rules and regulations, as necessary to carry this Article into effect, shall be recommended by the Board and approved by the Director in any season when grade regulations and inspection procedures are made effective by the Director pursuant to this program, provided that any such recommendations shall be made no later than June 1 of each year. Failure of the Board to make recommendations on or before the deadline date will mean that such administrative regulations in effect for the immediately preceding marketing season will automatically apply for the current marketing season; provided further that the recommendation by the deadline date may be a recommendation for no administrative regulation to be in force for that marketing season.

A R T I C L E VI

STABILIZATION POOL

Section A. ESTABLISHMENT OF STABILIZATION POOL IN THE INITIAL SEASON.

1. Upon a finding of the Board that the supply and demand conditions for wild rice (excluding seed rice) make it advisable to utilize a stabilization

pool, the Board may recommend to the Director the quantity of wild rice (excluding seed rice) which shall be placed in the stabilization pool. In the event this recommendation is given, the Board shall also recommend to the Director the quantity each producer shall be required to place in said pool, and shall also submit to the Director a written report containing the economic findings of the Board which served as the basis for said recommendation. In the event the Board subsequently deems it desirable to modify, suspend, or terminate a stabilization pool which may have been approved by the Director, it shall submit to the Director its recommendation together with a written report containing the economic findings of the Board, explaining the change in the economic conditions, which served as the basis for said recommendation.

2. Whenever the Director finds, from written reports supplied by the Board, that recommendations concerning a stabilization pool will tend to effectuate the declared purposes of the Act, he may establish a stabilization pool for wild rice (excluding seed rice) and may so designate the stabilization pool tonnage and the tonnage each producer is required to place in said pool.

3. The Board, with the approval of the Director, may establish rules and regulations as necessary for the determination and establishment and disposition of the stabilization pool tonnage.

Section B. STABILIZATION POOL VOLUME.

1. Wild Rice designated as stabilization pool wild rice shall become the property of the Board.

2. The wild rice in each producer's hands designated as stabilization pool wild rice shall be held by him for the account of the Board.

3. Each producer shall hold in storage all stabilization pool tonnage in his custody until he has been relieved of such responsibility by the Board. Such producer shall store such stabilization pool wild rice in such manner as will maintain the wild rice in the same condition as when the pool was established, except for normal and natural deterioration and shrinkage and except for loss through fire, acts of God, force majeure, or other conditions beyond the producer's control.

4. The Board may, after giving reasonable notice, require a producer to deliver to it or to anyone designated by it, at such producer's warehouse or at such other place as the wild rice may be stored, part or all of the stabilization tonnage wild rice held by him.

5. Each producer shall at all times hold in his possession or under his control that quantity of wild rice he is required to place in the stabilization pool, less any quantity of such stabilization pool tonnage delivered by him pursuant to instructions of the Board.

6. Stabilization pool tonnage wild rice delivered by any producer to the Board or to any person designated by it, whether in bulk form or packed wild rice, shall meet the applicable minimum grade and condition standards. The Board shall have the authority to require in its discretion and at its expense such reinspection and certification of stabilization pool tonnage wild rice as it may deem necessary.

7. In the event the Board offers to release to producers stabilization pool tonnage wild rice, each such producer shall be given the right to the release of his share of each offer.

Section C. DISPOSITION OF STABILIZATION POOL VOLUME.

1. The Board may recommend to the Director the disposition of stabilization pool wild rice through any or all of the following outlets:

- a. Regular marketing channels.
- b. Only in foreign markets.
- c. Non-competitive marketing channels.
- d. By-products.

2. On or before May 31 of any year, the Board shall announce the disposition, including carryover into the next marketing season, of all stabilization pool tonnage wild rice. Said pool shall be liquidated as rapidly as practicable.

A R T I C L E VII

BUDGETS AND RATE OF ASSESSMENT

Section A. RECOMMENDATIONS OF BUDGETS AND RATE OF ASSESSMENT BY THE BOARD. At the beginning of each fiscal year hereunder and as may be necessary thereafter, the Board shall recommend to the Director, budgets of estimated expenditures and reserves for the administration of this Program and the activities authorized hereunder. The Board shall also recommend a rate of assessment calculated to provide adequate funds to defray the proposed expenditures and reserves as set forth in such budget or budgets; provided, such rate shall not exceed a total of seven dollars (\$7) per harvested acre or the equivalent thereof during the 1986-87 marketing season; shall not exceed eight dollars (\$8) per harvested acre or the equivalent thereof during the 1987-88 marketing season; shall not exceed nine dollars (\$9) per harvested acre or the equivalent thereof during the 1988-89 marketing season; shall not exceed ten dollars (\$10) per harvested acre or the equivalent thereof during the 1989-90 marketing season; and provided, further, that such rate of assessment shall not exceed ten dollars (\$10) per harvested acre in subsequent marketing seasons.

Section B. APPROVAL OF BUDGETS AND FIXING OF RATE OF ASSESSMENT BY THE DIRECTOR. If the Director finds that the recommended budgets and rate of assessment are proper and equitable and calculated to provide such funds as may be necessary to properly carry out the provisions of this Program, he may approve such budgets and rate of assessment.

Section C. PAYMENT AND COLLECTION OF ASSESSMENTS.

1. Assessments on Milled, etc., Wild Rice. The obligation to pay assessments under this Program shall apply to the producer for all wild rice produced by him. At the beginning of each fiscal year the Board shall recommend to the Director of Food and Agriculture administrative rules and regulations to carry out the collection of assessments. Said administrative rules and regulations may include but shall not be limited to collection of assessments directly from producers and/or collection of assessments from each miller or handler of wild rice on all wild rice received by him or her from a producer at the rate approved by the Director pursuant to the provisions of this Program. The miller or handler may, however, deduct any assessment paid for and on behalf of a producer from any money owed by the miller or handler to the producer. The administrative rules and regulations shall also provide for collection of assessments on seed wild rice. Failure of the Board to make recommendations prior to the commencement of a fiscal year, with the exception of the first year of operation of the Program, will mean that such administrative regulations in effect for the immediately preceding marketing season will automatically apply to the current marketing season.

2. Failure to Pay - Penalty. Any assessment levied hereunder shall be payable only one time, shall constitute a personal debt of every person so assessed, and shall be due and payable to the Director or the Board upon demand. In the event of failure of any person to pay any assessment hereunder, the Director may file a complaint against such person in a State court of competent jurisdiction for the collection thereof pursuant to the provisions of Section 58929 of the Act. The Director may add to any unpaid assessment a collection expense penalty not to exceed ten percent (10%) of such unpaid assessment.

Section D. REFUNDS. Any money collected as assessments during a marketing season and not expended in connection with this Program may, at the discretion of the Director, be refunded after the close of any marketing season upon a pro rata basis to all persons from whom assessments were collected; or all or a portion of such money as may be recommended by the Board and approved by the Director may be carried over into the next marketing season if the Director finds that such money may be required in defraying the costs of this Program in such succeeding season.

Section E. BONDS. The Director may require that any and all persons handling substantial funds collected pursuant to the provisions of this Program shall execute and deliver to the Director a bond or bonds in such amount as the Director may designate with surety thereon satisfactory to the Director, conditioned upon the faithful performance of the duties of such person pursuant to the provisions of this California Wild Rice Program.

A R T I C L E VIII

GENERAL PROVISIONS

Section A. ADMINISTRATIVE RULES AND REGULATIONS. Upon the recommendation of the California Wild Rice Board, the Director is authorized to issue and make effective administrative rules and regulations and interpretations of terms as provided for under Article 18 of the Act.

Section B. COORDINATION WITH OTHER STATE OR FEDERAL MARKETING ORDERS. Insofar as may be practicable, the administration of this Program may be coordinated with any other marketing order or agreement or program that may be made effective for wild rice under either State or Federal Statutes, or may be coordinated with State or Federal marketing orders or agreements or programs for any other commodity.

A R T I C L E IX

BOOKS AND RECORDS

Section A. BOOKS AND RECORDS. Any and all persons subject to the provisions of this Program shall maintain books and records reflecting their operations under this Program and shall furnish to the Director or his duly authorized or designated representatives, such information as may be, from time to time, requested by them relating to operations under this Program and shall permit the inspection by said Director, or his duly authorized or designated representatives, of such portions of such books and records as may relate to operations under said Program.

On or before May 31 of each growing season, each wild rice producer shall report to the Wild Rice Board the number of acres he or she has planted or intends to plant during that particular growing season. The information obtained from each individual grower shall be confidential and shall not be released for any purpose.

Section B. CONFIDENTIAL INFORMATION. Any information obtained by any person pursuant to the provisions of this Article shall be confidential and shall not be by him disclosed to any other person save to a person with like right to obtain the same or any attorney employed by the Director or the Board to give legal advice thereupon or by court order.

Section C. IMMUNITY. No person shall be excused from attending and testifying or from producing documentary evidence before the Director in obedience to the subpoena of the Director on the ground or for the reason that the testimony or evidence, documentary or otherwise, required of him may tend to incriminate him or subject him to a penalty or forfeiture. But no natural person shall be prosecuted or subjected to any penalty or forfeiture for or on account of any transactions, matter, or thing concerning which he may be so required to testify, or produce evidence, documentary or otherwise, before the Director in obedience to a subpoena issued by him.

A R T I C L E X

APPEALS

Section A. APPEALS. Any person affected by this Wild Rice Program may petition the Director to review any order or decision of the Board or any of its committees. Any such petition must be filed in writing setting forth the facts upon which it is based.

Section B. EFFECT OF APPEAL. Pending the disposition of any appeal set forth in Section A of this Article, the parties shall abide by the order or decision of said Board, unless the Director shall rule otherwise. The Director shall, if the facts stated show reasonable grounds, grant any order or decision upon which an appeal is taken.

A R T I C L E X I
DURATION OF IMMUNITIES

Section A. DURATION OF IMMUNITIES. The benefits, privileges, and immunities conferred by virtue of the provisions hereof shall cease upon its termination, except with respect to acts done under and during the time the provisions hereof are in force and effect.

A R T I C L E X I I
AGENTS

Section A. AGENTS. The Director may, by designation in writing, name any person or persons, including officers or employees of the California Department of Food and Agriculture, to act as his agent or agents, with respect to any provision of this Wild Rice Program.

A R T I C L E X I I I
RELATION TO OTHER LEGISLATION

Section A. ANTI-TRUST LAWS. In any civil or criminal action or proceeding for violation of the Cartwright Act, the Unfair Practices Act, the Fair Trade Act, Section 16600 of the Business and Professions Code, or any rule of statutory or common law against monopolies or combinations in restraint of trade, proof that the act complained of was done in compliance with the provisions of this Program and in furtherance of the purposes and provisions of the Act shall be a complete defense to such action or proceeding.

A R T I C L E X I V
SEPARABILITY

Section A. SEPARABILITY. If any provision hereof is declared invalid, or the applicability thereof to any person, circumstance, or thing is held invalid, the validity of the remainder hereof, or the applicability thereof to any other person, circumstance, or thing, shall not be affected thereby.

A R T I C L E X V

EFFECTIVE TIME AND TERMINATION

Section A. EFFECTIVE TIME. This Program shall become effective on the date specified by the Director and shall continue in effect until suspended or terminated by the Director or by operation of law in accordance with the provisions of the Act; provided, that beginning in 1991 and every fifth (5th) year thereafter, the Director shall conduct a referendum of producers to determine whether or not this Program should be continued. If a majority of the producers voting in the referendum vote in favor of continuation, the Program shall be continued.

Section B. TERMINATION. Pursuant to the provisions of Section 59081 of the Agricultural Code, the Director shall suspend or terminate this Program, or any provision thereof, whenever he finds, after a public hearing duly noticed and held in accordance with the provisions of Article 6 of Chapter 1, Division 21 of said Agricultural Code, that this Program, or any provisions thereof, is contrary to or does not tend to effectuate the declared purposes or provisions of the Act within the standards and subject to the limitations and restrictions therein imposed; provided, that such suspension or termination shall not become effective until expiration of the then current marketing season. The Director shall also suspend the provisions or terminate this Program in accordance with the provisions of Sections 59082, 59084, or 59085 of the Act.

Section C. EFFECT OF TERMINATION, SUSPENSION, OR AMENDMENT. Unless otherwise expressly provided for in the notice of amendment, suspension, or termination, no amendment, suspension, or termination of the Program issued by the Director shall (a) affect, waive, or terminate any right, duty, obligation, or liability which shall have arisen or may thereafter arise in connection with any other provisions of said Program not so amended, suspended, or terminated; (b) release, condone, or dismiss any violation of said Program occurring prior to the effective time of such amendment, suspension, or termination; (c) affect or impair any right or remedy of the Director or of any person with respect to any such violation; or (d) affect any liabilities pursuant to the provisions of this Program.